

PREHISTORIC CULTURAL RESOURCES IN NORTHFIELD:

A CONSERVATION HANDBOOK

Dena F. Dincauze and Stuart Eldridge

Department of Anthropology

University of Massachusetts, Amherst 01003

Massachusetts Historical Commission

Boston

September 1984

Loc  
560  
Din  
D



## TABLE OF CONTENTS

Chapters	Pages
1. Northfield's Prehistoric Heritage and its Wise Use	1
Characteristics of Archaeological Sites	2
Summary of Site Locations	3
Land Use Conflicts	5
2. History of Archaeological Research in Northfield	8
The Field School in Northfield	10
Capabilities of Modern Archaeological Research	14
3. The Northfield Environment--Past and Present	16
Landforms, Water Courses, and Soils	16
Climate, Vegetation and Wildlife	21
Prehistoric and Modern Land Use	22
4. Native American Culture History	26
Summary of Regional Prehistory	27
Paleoindian: 10,500-8000 B.C.	27
Early and Middle Archaic Periods: 8000-4000 B.C.	28
Late Archaic: 4000-1500 B.C	28
Woodland Period	29
Historic/Contact Period	30
Conclusions	32
5. The Management of Archaeological Resources	33
Recognition of Archaeological Resources	34
Sites	34
Collections	37
Human Remains	38
Commitment to Preservations and Development	38
Means for Preservation	40
Initiatives for Education	40
Planning for Compatible Landuse	41
Zoning and Districting	44
Cooperation with Federal and State Programs	44
Conclusions	48
References Cited	50



35-9d

[illegible]





DEC 27 1983

PREHISTORIC CULTURAL RESOURCES IN NORTHFIELD:

A CONSERVATION HANDBOOK

Dena F. Dincauze and Stuart Eldridge

Department of Anthropology

University of Massachusetts, Amherst 01003

Massachusetts Historical Commission

Boston

September 1984



## TABLE OF CONTENTS

Chapters	Pages
1. Northfield's Prehistoric Heritage and its Wise Use	1
Characteristics of Archaeological Sites	2
Summary of Site Locations	3
Land Use Conflicts	5
2. History of Archaeological Research in Northfield	8
The Field School in Northfield	10
Capabilities of Modern Archaeological Research	14
3. The Northfield Environment--Past and Present	16
Landforms, Water Courses, and Soils	16
Climate, Vegetation and Wildlife	21
Prehistoric and Modern Land Use	22
4. Native American Culture History	26
Summary of Regional Prehistory	27
Paleoindian: 10,500-8000 B.C.	27
Early and Middle Archaic Periods: 8000-4000 B.C.	28
Late Archaic: 4000-1500 B.C	28
Woodland Period	29
Historic/Contact Period	30
Conclusions	32
5. The Management of Archaeological Resources	33
Recognition of Archaeological Resources	34
Sites	34
Collections	37
Human Remains	38
Commitment to Preservations and Development	38
Means for Preservation	40
Initiatives for Education	40
Planning for Compatible Landuse	41
Zoning and Districting	44
Cooperation with Federal and State Programs	44
Conclusions	48
References Cited	50

## FIGURES

## Pages

1. Map of Northfield's Indian Sites and find-spots, as given by Temple and Sheldon (1875), with page references indicated for special finds (numbered circles). Burials at numbers 1,2,3,4,5,7,8; artifacts at numbers 1,2,3,6; "granaries" at numbers 1,2,3,4,5. Base map adapted from Arrow (1974). 4
2. Principal geomorphic units of Northfield and towns adjacent to the south. Adapted from Arrow (1974); Campbell and Hartshorn (1980), and US Geological Survey topographic quadrangles, simplified. 13
3. Anticipated future land uses in Northfield. From Northfield Planning Board (1977:108). 36

## TABLE

1. Site Occurance Potentials Ranked by Soil Types. 19

## LIST OF APPENDICES

- A. Addresses for Information About Historic Preservation, Policies, and Regulations. 57
- B. Acknowledgements. 58
- C. Newspaper Account of First Year's Major Results 60



## CHAPTER 1

### NORTHFIELD'S PREHISTORIC HERITAGE AND ITS WISE USE

Northfield's first historians knew what later historians tend to ignore--the fact that people lived in the area for many generations before written records chronicled their existence. J.H. Temple and George Sheldon compiled local folklore, tradition and observation in an attempt to see beyond the limits of history into the unplumbed depths of the prehistorical past. Their descriptions of Indian remains and living sites in Northfield preserved for generations to come a wealth of detail that, even in the 1870s, was rapidly disappearing. Today, we know both more and less than they did.

We know, as Temple and Sheldon did not, that people came to Northfield territory during the waning centuries of the last glacial period. We know that the area has been continuously inhabited for at least 9,000 years. We also know, from research conducted elsewhere in New England and North America, the rough outlines of changing lifestyles through the millennia (Chapter 4). Time and human endeavors have been unkind to the material remains of Northfield's native peoples; today, archaeologists confront a severely reduced inventory of artifacts and sites, as they attempt to learn something of the lifeways in ancient Northfield. Without Temple and Sheldon's catalog, it would be easy to underestimate past population densities in this part of the valley. On the other hand, we understand that material remains, which the historians assigned to at most a few generations, represent human activities over many thousands of years.

We do not know yet whether human eyes saw the valley while it was filled wall to wall with a lake of glacial meltwater. People were in the area shortly after the lake drained, when the river flowed on lake-bottom silts 80 or more feet above the modern water surface. The first pioneers could have hunted caribou and arctic fox, and probably used the skins of those animals for protection from Ice Age winds. Later, forests of conifers and northern hardwoods sheltered other kinds of game as well as people who made a comfortable living from the variety of animal and vegetable resources then available. In time, the valley became deeper and narrower as the river cut into soft sediments. The low floodplains



("meadows") provided rich, easily worked soils for experiments in farming. When appropriate skills and hardy crops had been developed, farmers could use the extensive terraces ("plains"), expanding their production and increasing their economic security. The natural advantages that attracted English farmers to Northfield seem to have been fully appreciated and utilized by the native peoples (Thomas 1976).

Modern methods of archaeological research can reveal much about past lifestyles, environmental conditions, and the triumphs and defeats of the human condition (Hole and Heizer 1977; Struever 1979). The depletion of Northfield's prehistoric resources is beyond regret, but its pace can be slowed significantly by concerned and enlightened community action. Resources saved today will be available for study tomorrow. Reconnaissance in Northfield has demonstrated that research opportunities still exist. There remains also the possibility that essentially intact, buried sites lie within ancient or recent flood deposits.

To the extent that they are recognized at all, archaeological sites are best known to the public as places where "arrowheads and tomahawks" may be found. This concept of sites, true in a very limited sense, has contributed directly to the destruction of irreplaceable records of past human life. A trained archaeologist cherishes sites as repositories of information; only some of that information is inherent in buried objects. As the locales of human experience, archaeological sites hold information which rightly belongs to everyone. To yield their information abundantly, sites must be investigated by highly skilled specialists from many disciplines.

#### CHARACTERISTICS OF ARCHAEOLOGICAL SITES

Archaeological sites, as cultural and historical resources, have four characteristics which must be respected if we are to use these resources wisely. Sites are

(1) finite, (2) unique, (3) systemic, and (4) fragile. Like all historic monuments, archaeological sites are finite because, as products of the past, they are non-renewable resources. The resource base, once created, cannot be expanded in the future. Archaeological sites, again like historic monuments, are unique because each records events which occurred at a specific time and place, distinct from events at all other times and places. In addition, archaeological sites have a special quality of uniqueness in that they can only be studied destructively--once excavated, an archaeological site or portion thereof has no further data resources to offer.

The systemic character of archaeological sites derives from their origin as the localized traces of human behavior, which is related to conditions and events in other times and places. No site can be understood in



isolation from its natural surroundings, from the activities of its inhabitants at other sites, or from the activities of the local predecessors of its inhabitants. Archaeological research increasingly involves the coordinated efforts of many natural scientists working with the archaeologist at a site, to reconstruct the environments of the past and to document human interactions with them. In return for their interpretation of a site's ecology, they may acquire information directly relevant to their own research. By their very nature, archaeological sites are time capsules, preserving traces of past biotic communities, climate, landforms, sea levels, and other elements of human ecology which may be of immediate interest to other scientific disciplines.

And, finally, archaeological sites are fragile because their significance derives not only from their contents, parts of which are almost indestructible, but from the spacial patterning of the contents. Archaeologists do not excavate primarily to retrieve objects, but to observe the relationship among objects in their original position, and between objects and other, more ephemeral traces of human activities. For this reason, a site excavated without records is destroyed just as surely as a site bulldozed, even if quantities of objects are collected intact.

[Dincauze and Meyer 1977:8]

Northfield's sites are in no way exceptional in regard to these considerations. They can yield their information only to skilled researchers. They will be available for such research only to the extent that they can be protected from casual or catastrophic destruction. Such threats can only be expected to multiply in the years to come, as multiple use of town resources increases.

#### Summary of Site Locations

A century and a half of agriculture, housebuildings, and minor industrial development exposed the major archaeological concentrations in Northfield. The Temple and Sheldon catalog details what was known or believed about them in the 1870s. The living sites, and almost all the cemeteries, were situated on the plains--high terraces above the modern river--which originated as glacial lake beds or abandoned river floodplains. Figure 1 has been compiled from the 1875 narrative, as a graphic summary of the historians' data and conclusions.

Recent archaeological research in Northfield (Chapter 2) has changed the picture a little. Field work and background studies have added details, and have clarified some of the relationships between landforms and human activities. It is now known that archaeological



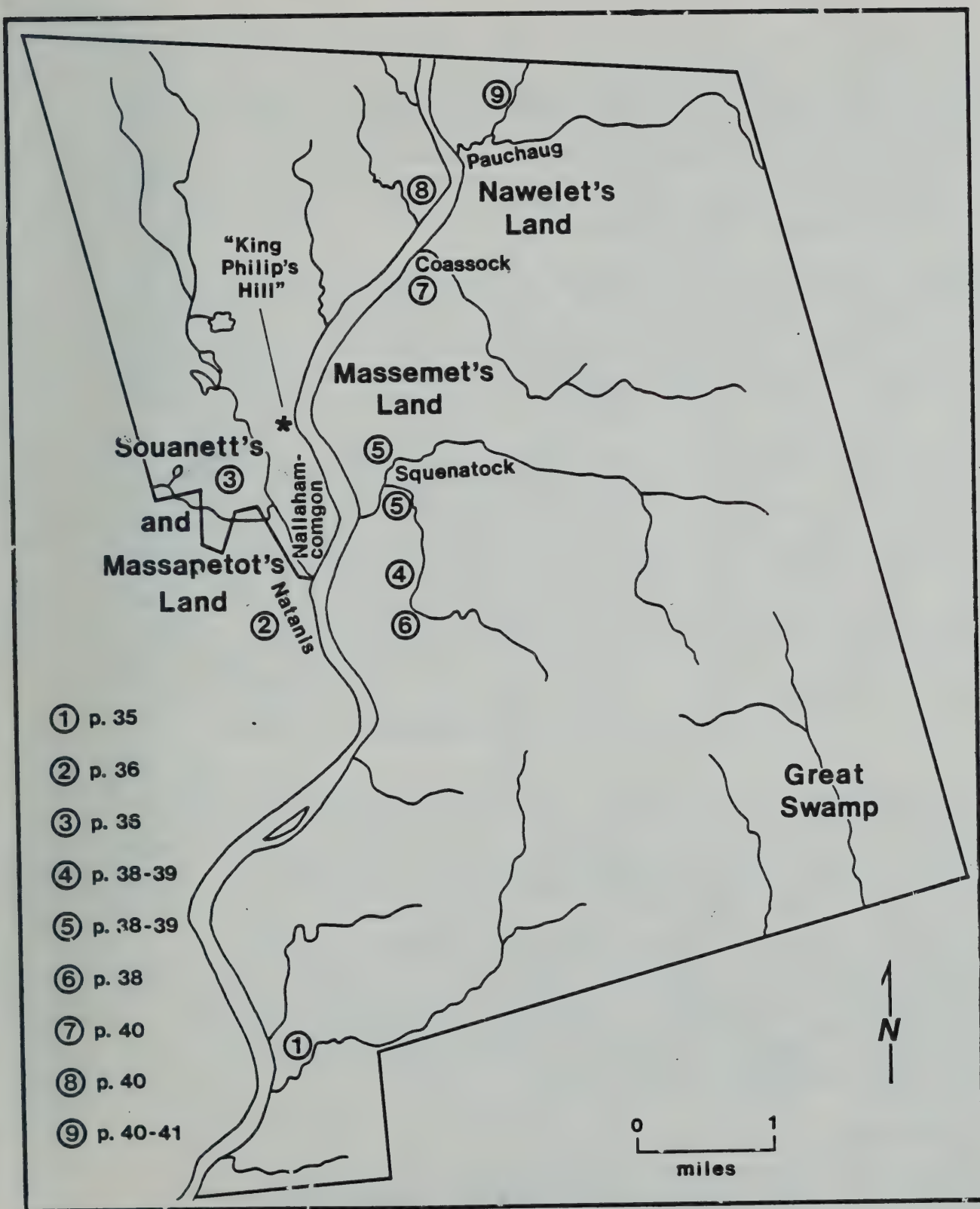


Figure 1

Map of Northfield's Indian sites and find-spots, as given by Temple and Sheldon (1875), with page references indicated for special finds (numbered circles). Burials at numbers 1,2,3,4,5,7,8; artifacts at numbers 1,2,3,6; "granaries" at numbers 1,2,3,4,5. Base map adapted from Arrow (1974).

remains exist on some of the meadows, and can be expected to lie undiscovered on others as well. Geological research has revealed a complex, but orderly, sequence of events behind the development of the modern landscape. The geological sequence provides a framework for a chronology of archaeological sites, with some being demonstrably older than others because of their relationship to geological events. This information is discussed more fully in Chapter 3.

Modern archaeologists employ analytical techniques developed by geographers to help them understand past human use of landscapes. They study the situations of archaeological remains in relationship to landforms, water courses, and natural resources in an effort to learn where people concentrated their activities, and why. "Locational analyses" of this sort have indicated that prehistoric peoples must have made occasional, purposeful trips to the rugged hilly terrain of eastern and western Northfield (Dincauze, Moore, and Root 1977; Williams et al. 1977). We expect, therefore, that small archaeological sites of different ages exist in the hills. In 1977, the UMass Archaeological Field School made a serious, if limited, effort to find sites in the hills. The failure of that effort is not conclusive, and we remain hopeful that sites may yet be found. They would be especially interesting because they are likely to preserve the remains of activities conducted by only a few people over a short time, undisturbed by later visitors, and thus easier to interpret than the complex, disturbed sites in the valley. Chapter 3 provides more details on the procedures and results of site-locational research in Northfield, while Chapter 4 outlines changing prehistoric lifestyles in the area and considers some of the archaeological problems raised by Northfield data. These problems may someday be solved with the help of Northfield residents.

In the present state of knowledge, all the known prehistoric sites in Northfield lie on or in the sediments of the main-stem Connecticut River valley, on the "plains" and "meadows" and the adjacent dune sands. Town planners and developers should regard those parts of town as especially sensitive for archaeological remains. This information is not sufficient in itself to determine the presence or absence of prehistoric archaeological sites in any given spot. It cannot be emphasized too strongly that our knowledge of site locations is subject to revision and expansion. No part of Northfield can be summarily dismissed from archaeological considerations. The advice of knowledgeable specialists should be sought (see Chapter 5) in advance of land modification projects anywhere. Chapter 5 summarizes procedures for compliance with state and federal regulations in this regard.

### Land Use Conflicts

Agricultural activities take precedence among all the forces that disturb and destroy archaeological sites. The plow has exposed by far the greatest number of remains. The construction of building foundations and roads follows closely in the ranks of destructive agents, especially in the present century, with the heavy excavation and grading equipment now used.



Once an archaeological site is plowed, its vertical structure is totally destroyed to the depth of the plowzone. Older and younger deposits and their contents are inextricably mixed together, and information on relative ages is lost. However, horizontal relationships are disturbed less seriously, and retain much of their original information content. By itself, continued plowing of a site rarely causes increasing damage, unless plows are set deeper or loss of surface soil causes the plowzone to migrate downward into the subsoil. In areas where wind erosion or sheet wash are minimal, archaeological evidence may remain below the plowzone. For this reason, no plowzone site in Northfield can be considered totally destroyed on the basis of information now available (Talmage and Chesler 1977). More serious destruction has resulted from generations of collecting of artifacts from plowed fields. The latter activity destroys both the content and the horizontal structure of sites. Some favored collecting areas in Northfield have been essentially picked clean, with little left in the plow zone but stone flakes.

Excavation for building foundations, roads and pipelines, and quarrying of sand, gravel and topsoil destroy sites completely in the affected areas. Sanitary landfill facilities and cemeteries can threaten archaeological sites. Erosion, gradual or catastrophic, is equally destructive. The Connecticut River, in cutting its channel down to its present rock-guarded level, has doubtless destroyed evidence of ancient human activities. It continues to do so during floods and, less dramatically, as it adjusts its bed by lateral shifting. The river also responds to fluctuations caused by the Northfield Mountain Pumped Storage Facility, by eroding its banks.

#### APPROACHES TO SITE PROTECTION

Northfield will continue to grow and to develop. In the course of its evolution, more prehistoric sites will be damaged and destroyed. With their passing, the town will lose all it will ever have of its prehistoric human record. That loss need not be complete. Much can be saved, in the ground and in reports, exhibits, and textbooks, if planning for conservation and wise use begins soon and is effective.

Both the state and federal governments have recognized the unique human and scientific values inherent in archaeological sites. They have recognized the public's interest in the sites and the information incorporated in them. Legislation has been passed with the intent of providing some protection for these cultural and natural resources. The destruction without record of archaeological sites by projects involving public money or occurring on public land is now officially discouraged. A number of explicit administrative procedures have been established to protect sites when possible and to excavate them properly when they must be sacrificed.

Effective protection of archaeological sites cannot be imposed from above, by federal and state governments. It must grow from the interest and commitment of communities, which can exert vigilance and control where those count--on the land. If we accept the principle that the public has an interest in, and a right to, the information contained in archaeo-

logical sites (McGimsey 1972:5), then the public must vigilantly protect its interests and rights. By using the mechanisms established for site protection, and by creating a climate of cooperative, informed concern for the resources, communities can assure themselves of access to the long past which is their heritage and that of all mankind.

Specific recommendations for local programs, and policies, and procedures are discussed in Chapter 5. Imaginative cooperation among town officers, commissions, and citizens' groups can retain the town's heritage for its people, and develop local interest, knowledge, and pride.



## CHAPTER 2

### HISTORY OF ARCHAEOLOGICAL RESEARCH IN NORTHFIELD

Archaeology everywhere developed out of antiquarianism. Antiquarianism is that widespread human motivation which impells people to collect and cherish objects for their own sakes, as sources of curiosity, wonder, and aesthetic satisfaction. Archaeology as a discipline has been developing away from such limited goals, as first the natural sciences (geology, biology), then the physical sciences (chemistry, atomic physics), and, most recently, the social sciences have brought to the study of mankind's past their rigorous observation, specialized analytical techniques, and organized inquiry. This development occurred in both the Old World and the New in the 19th and 20th centuries, with some precocious beginnings even earlier (Thomas Jefferson in 1784). Scientific inquiry may be characterized by its techniques of controlled observation and analysis directed toward the solution of a problem or the search for an explanation. To the scientific archaeologist, artifacts are not goals in themselves, but are means, among other means, for reaching the goal of understanding the human past.

Investigation into the history and archaeology of the Connecticut Valley began as one facet of the intensely patriotic nationalism of the 19th century. The approach of the nation's Centennial provoked an enthusiasm for local and regional histories, among which Northfield's history of 1875 takes a proud place.

J.H. Temple produced other town histories as well, notably one for Framingham, Massachusetts. To an extent rare in his time, he summarized what was then known of the natural history and native peoples of the areas. His enthusiasm for the subject, and George Sheldon's interest and local contacts, resulted in the rich compilation of data and interpretation that they produced for Northfield.

Serious artifact collecting became fashionable at about the same time. In the Connecticut Valley below the Millers River, industrial development, commercial farming, and the growth of urban centers exposed many sites. Collections were made, traded, displayed, and sold, becoming in the process irreparably isolated from their origins.

Rural Northfield saw less intensive exploitation of its sites, so that collections tended to stay in the family, if not on the family farm, for a few more generations. Widespread dispersal of Northfield's collections seems to be mainly a 20th-century phenomenon. Its recency does not make it any less destructive of information, but does leave some room for hope that the tide may be turned by effective action and goodwill.

Until after the middle of the 20th century, Northfield collections were little known beyond the confines of the town or even of the proprietary families. Consequently, none are mentioned in that early summary of regional archaeology, Antiquities of the New England Indians (Willoughby 1935). No Northfield collectors were active in the Massachusetts Archaeological Society in its early years and therefore no sites were recorded in the Society's site inventory. A few pieces were donated to the collections of Memorial Hall in Deerfield, and to the Springfield Museum. Temple and Sheldon record large collections in the families of Lyman Gilbert of Northfield Farms and the Holtons above Bennett's Meadow. Neither of these collections is available for study now. A few pieces from the Gilbert farm are held at the Northfield Historical Society's museum, and the Society has recently received a gift of some pieces found on the Holton properties early in this century.

Some large private collections of Northfield artifacts, made in this century, still exist; most, however, have been dispersed in ignorance of their information value. Several farm families maintain informative small collections from their properties. The Historical Society and the Dickinson Library each have a number of specimens donated by Northfield residents, but the pieces are not documented as to find spots. Since the collections include some specimens that are either labeled as found outside of Northfield or are stylistically attributable to distant places, one cannot be confident that individual unlabeled specimens came from Northfield.

Town residents, among them George Nelson, Robert Remillard, Priscilla Carroll, and Willis and Evelyn Parker have long-standing acquaintance with and knowledge of major sites in the town. The Historical Society continues its valuable work in compiling and curating collections, memoirs, and local traditions relating to the sites.

Beginning in the mid-1960s, the Connecticut River Valley has been the focus of investigations oriented to the definition or solution of problems in human history and prehistory. Students and faculty at the Department of Anthropology of the University of Massachusetts initiated research in Greenfield, Gill, and Northfield, with enthusiastic support and cooperation from the Norwottuck Chapter of the Massachusetts Archaeological Society. The linguistic and ethnohistorical research of Gordon Day (Day 1965, 1975, 1981:12-29) has cleared away some of the haze of legend that obscured our understanding of the historic Squakeag (Sokwaki) and Pocumtuck peoples. Peter Thomas's research on the Squakeags involved him with Northfield's sites and historical documents (Thomas 1979). Federally-funded "cultural resource" surveys have resulted in a number of reports that include or focus on Northfield's sites (Dincauze et al. 1977; Dincauze, Moore, and Root 1977; Dincauze 1978; Salwen 1969; Williams et al. 1977; Wilson and Belding 1979). Research into surficial geology,



glaciology, hydrology, natural resources and land use (Ashley 1972; Campbell 1975; Campbell and Hartshorn 1980; Clark and Carlozzi 1976; Hartshorn 1969; Mott and Fuller 1967; Sammartino 1981) has yielded significant insights into human habitation and settlement patterning within the town.

#### THE FIELD SCHOOL IN NORTHFIELD

The field school was brought to Northfield in 1976 at the invitation of the local Historical Commission, following the initiative of Rosa Johnston. The Commission's need for professional evaluation of the town's prehistoric sites nicely complemented the research goals of the field school program, which was designed to provide detailed data on site locations and research applications to the Department of Anthropology at the University, and to the statewide inventory of cultural resources maintained by the Massachusetts Historical Commission under the provisions of Massachusetts law (Ch. 9 Sect. 26-27).

The field school was designed to teach and undertake programs of analytical archaeological survey (Dincauze 1979a, 1979b). The students and faculty prepared, in advance of fieldwork, sets of verbal "models" and hypotheses that sought to describe and explain the distributions of prehistoric sites in various landscapes. Fieldwork was then carried out to determine whether the actual distributions of sites support or refute the hypotheses. In this way, the researchers are forced to be explicit about their expectations and assumptions, and are enabled to modify or reject these on the basis of observed data. This approach required that the archaeologists gather comparable information from areas where sites are known to occur and those where sites are thought to be absent. They choose areas to test on the basis of sets of environmental criteria selected for relevance for testing expectations and hypotheses about human behavior.

Anthropological and ecological theory was brought to bear on the problem of explaining the spatial distribution of archaeological sites in Northfield. In advance of field work, the archaeologists defined three assumptions about human behavior that they hoped to test from the data collected. Those were that:

- (1) the distribution of prehistoric human groups was conditioned in part by the specific environments in which they lived,
- (2) the technology available to the groups and their social, political, and economic organizations were crucial determinants of location, and
- (3) people usually act to minimize the cost and effort of obtaining what they need.

Prehistoric people made decisions about where to locate themselves on the basis of the annual and seasonal availability of the resources they needed and were able to provide for themselves. If we combine the first assumption that the environment conditioned the location of human groups in the past with the idea that human groups would try to minimize their

efforts in handling the resources, we can form the hypothesis that these groups located themselves where most of the resources occurred together or where the average distance to diverse resources was least. Another possible implication of these assumptions is that people would be drawn to locations close to critical but bulky resources, such as fresh water or arable land.

Very little information exists on past environmental conditions in Northfield. Fortunately, some good descriptive studies of the modern environments are available, which can be adapted to help us understand the past (Campbell 1975; Campbell and Hartshorn 1980; Clark and Carlozzi 1976; Mott and Fuller 1967; Sammartino 1981). Chapter 3 discusses our methods for estimating the quality and distribution of natural resources through the past 12,000 years, and summarizes the result of our studies.

The variety of environments within Northfield's boundaries, both prehistoric and modern, is high. To deal with this diversity, we planned survey activities to sample each of the major environmental zones. Our testing within the several zones was constrained by time and access permissions. The generosity of Northfield landowners made possible access to all of the town's variety, even to prime agricultural land in the heart of the growing season. Time constraints were most restrictive. Survey work is labor-intensive, physically and mentally taxing. The students and the instructors were learning and experimenting with a number of techniques. Thirty survey units, ranging in size from about 2 to 4 hectares each (ca. 5-10 acres), were tested in the two field seasons. In addition, ten days' intensive work was distributed among three sites and Pauchaug Meadow. The range of environments tested included flood plains, high terraces, dunes, rocky hillsides, swamp borders, and upland fields and forests.

Our sample of Northfield's total area was, therefore, very small. All our survey units together total less than one square kilometer, about 1% of the town's area. Because we were selecting for maximum diversity of environments in our survey units, our sample of any one kind of environment is very small. Our test results can only be used to express expectations about relative site densities in the several zones; the expectations still need to be rigorously tested. Such expectations can, however, serve as the basis of site conservations plans, as will be explained in Chapter 5.

The activities during the school session fell into three major categories: (a) "survey", (b) "site evaluation" and (c) "laboratory" modes of research. The objectives of the survey mode were to investigate adequately a number of sampling units in different parts of town. This investigation involved determining the present environmental context of the sampling unit and collecting any information which would permit us to understand the ecology of the unit before the environment was modified by recent or historic land use. The next part of the investigation was to determine the presence or absence of archaeological sites within the sampling unit. The basic survey activity was walking transects across



the sampling unit, and searching for indications of sites above and below the surface. Subsurface investigation was done by means of small test pits dug with shovels, or by inspection of soil core columns taken at regular intervals with a soil sampler. The location of transects within a survey unit, and the choice of sample or pit intervals, was established judgementally for each unit. The crew chiefs made these decisions, taking into consideration the nature of the terrain, depth and type of sediments and soils, and the distribution of vegetative cover.

Survey activities were concentrated on the river terraces and floodplains, lakeshore and dunefield environments (Figure 2) during 1976. This decision responded to the needs of the Northfield Historical Commission for information on known site locations in the town. The selection of survey areas was, therefore, determined by knowledge then current of artifact findspots. To balance this strongly biased sample, attention was directed in 1977 to the upland zones away from the river. We hoped thereby to test the general validity of some of the environmental criteria of site locations that emerged from the first season's work. Therefore, we sought upland areas close to running water, on well-drained soils, with landform shelter against the full effects of north and northwest winds. The selection of survey units in 1977 was directed by those criteria, amplified by other criteria developed from anthropological models of human behavior.

At Four Mile Brook, King Philip's Hill, and on the high terrace above Bennett Brook, we spent some time in site evaluation activities. These involved detailed mapping, intensive sub-surface testing by coring, proton magnetometer testing, and some excavation. By these means we hoped to learn about the structure of the sites below the surface, and perhaps come to understand the age, purpose and research potential of the archaeological remains.

An amount of time equal to all the field days was spent in laboratory work on the University campus. Here the activities ranged from conducting phosphate and pH tests on soils, to mapping, documentary research, artifact analysis and description, and the completion and interpretations of field records. A crucial step in the laboratory work was the cataloging and storage of the collected data.

The information gathered in Northfield in 1976 and 1977 has provided the basis for two investigative reports to state land management agencies (Dincauze et al. 1977; Dincauze 1978b). Site records have been filed with the Massachusetts Historical Commission and have contributed to two studies of Franklin County's prehistoric resources (Dincauze, Moore, and Root 1977; Williams et al. 1977). A report of the work at King Philip's Hill is being prepared for publication. The conservation land there is now listed on the National Register of Historic Places. The Northfield work has thus already contributed to improved understanding of archaeological resources not only within the town but in the country and region as well. The data compiled will be consulted for years to come, and will help to define and to solve research problems in prehistory and social science.

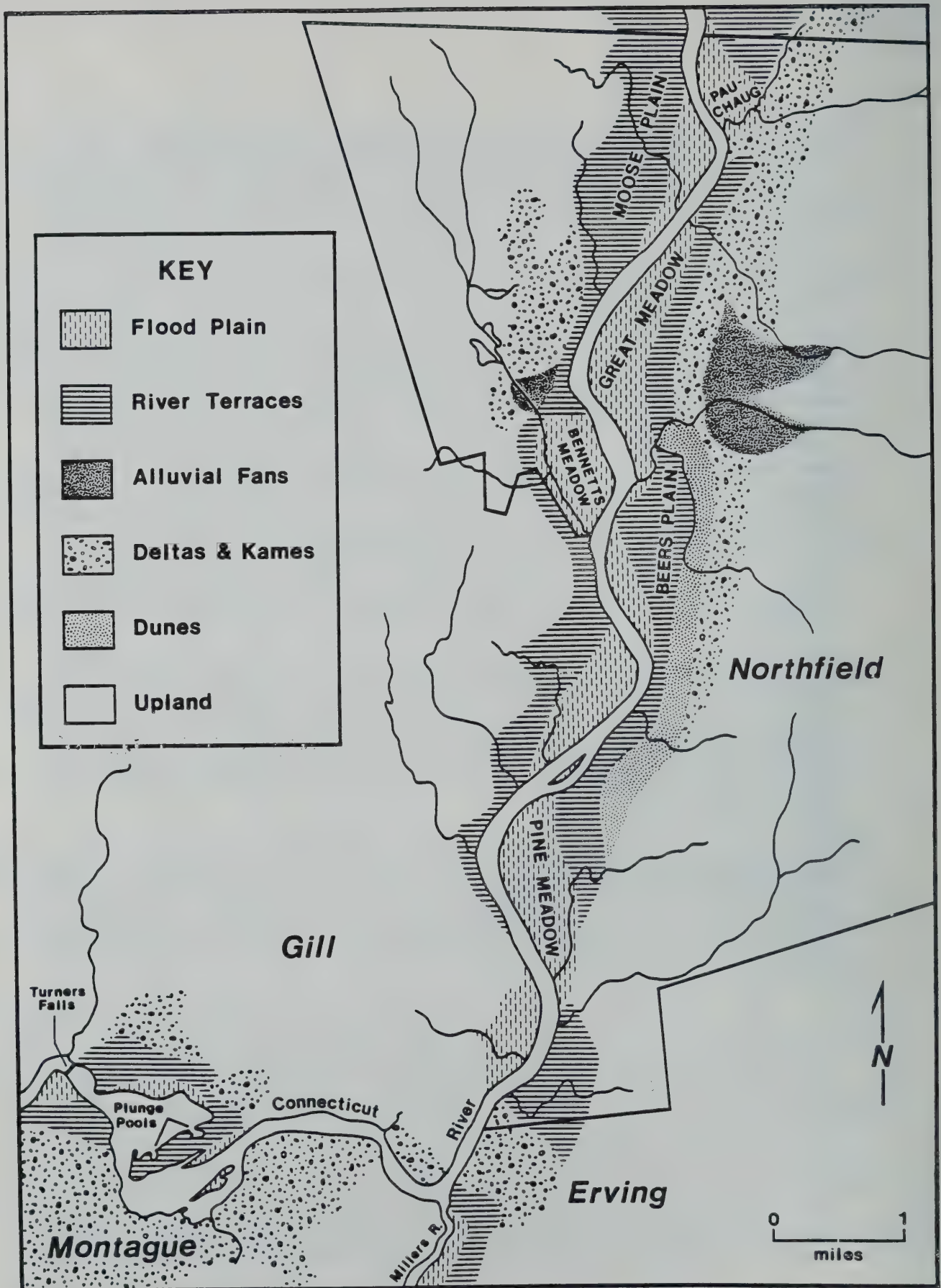


Figure 2

Principal geomorphic units of Northfield and towns adjacent to the south. Adapted from Arrow (1974); Campbell and Hartshorn (1980), and US Geological Survey topographic quadrangles, simplified.



## CAPABILITIES OF MODERN ARCHAEOLOGICAL RESEARCH

Given the opportunity to explore an undisturbed prehistoric site, the archaeologist of the late 20th century can learn a great deal about the people whose behavior created the site. The archaeologist, as a social scientist, is interested in the study of past human behavior and its evolution. Archaeologists study behavior indirectly through its material remains, rather than by direct observation of people. In order to derive the greatest possible amount and kinds of information from the remains of behavior, archaeologists observe the arrangement and context of the remains in space--vertically and horizontally. They observe, record, and analyze the materials that enclose the remains (usually soils), as well as the "associations" of each object (how it relates in space to all others). In the laboratory, further study of all objects and materials recovered require the application of special skills and techniques from many other disciplines (see Hole and Heizer 1977; Joukowsky 1980; Struever 1979).

From such studies, archaeologists can learn about many kinds of human behavior. They can infer the sources of raw materials, describe the manufacture and use of tools and utensils, describe the arrangement and construction of facilities such as houses, storage pits, and cemeteries, learn something about a human community's social organization and rituals, and daily tasks. Sometimes they can tell how many people used a site, for what range of activities, at what season(s) of the year, and for how long a duration of time (Thomas 1979a). The age of the cold campfires can be determined by measuring the disintegration of radioactive isotopes of carbon in the charcoal. Archaeologists try to learn how the location fit into the community's yearly round of activities, and what the relationships were between the community and its animate and inanimate environment.

Artifacts recovered with good records can be very informative to the analyst. The analyst can determine the techniques of manufacture and use, and patterns of discard or reuse. If the artifacts can be closely related to other objects and materials in the site, it may be possible to determine who made and used them, for what purposes, and where the related tasks were performed. It seems to be a universal characteristic of human beings to change the styles of their manufactured objects over time, as we change styles of clothing, automobiles, and furniture. This was true in the past, even though the rate of change may be measured in centuries rather than years. Thus, an approximate date of manufacture and use can be assigned to many objects on the basis of their style, if similar objects have been identified before and dated by geological or physical techniques.

The archaeologist's ability to assign approximate dates to artifacts means that even collections of objects removed from their original resting places can yield some information about past peoples. If the original find-spot or general location of an object is known, the object can yield information about the general time when a site or area was being used, possibly something about the identification of the people involved, and the nature of the activities. Without the locational information, however, the object's scientific value is minimal.

Anthropological archaeologists apply the information gathered in field investigations to studies whose ultimate goal is the explanation and understanding of human behavior in general. Anthropologists study humans in every time and place, in order to learn what it means to be human anywhere. The archaeological record is an especially valued source of information because archaeological remains can help us to know about lives and lifestyles which have run their courses. Archaeological remains are a record of "completed experiments" in human experience. In this fundamental quality they differ from observations of on-going behavior, the ultimate results of which may be unknowable. Successes and failures at the crucial business of survival can be evaluated in the archaeological record. The lessons learned can be informative to us today, as we face the challenges of shrinking resources, expanding populations, and degradation of environments. There are only a limited number of possible solutions to such difficulties; many of them have been tested in the past. We may learn to avoid serious errors, and to improve on former successful adaptations, if we can read the record compiled by our predecessors.



## CHAPTER 3

### THE NORTHFIELD ENVIRONMENT--PAST AND PRESENT

As a home for human communities, Northfield offers diverse natural resources as well as geographical amenities and limitations. Each community developed its own adaptations to the opportunities and constraints it faced. This chapter summarizes the town's landforms, water courses, soils, climate, vegetation and wildlife from the perspective of human lives affected by them, and concludes with some generalizations about the ways in which people have used the land and its resources for many thousands of years.

#### LANDFORMS, WATER COURSES, AND SOILS

Northfield's inviting stretch of the Connecticut River valley is delimited by rocky uplands on both east and west (Figure 2). The valley itself is formed by a down-faulted block of relatively soft rocks of Mesozoic (Triassic; "early dinosaur") and older ages, which have been eroded to levels well below those of the harder rocks which flank the valley (Bain and Meyerhoff 1963; Balk 1956).

The valley has been occupied by a river or rivers for millions of years, but the local course and size of the river have varied over that time. Within the time span of human occupation (the last 11,000 years or so) the river has changed dynamically. It is best understood by first considering the effects of glaciation on the land.

Continental ice sheets (glaciers), a mile or more thick, moved over the Northfield area several times in the last half million years. Geologists are able to identify only two such movements in southern New England, but evidence from elsewhere strongly implies a larger number (Schafer and Hartshorn 1965). The glaciers in Northfield scoured the hills of loose rock and soil, moving the unconsolidated materials southward. The softer rocks of the valley suffered the most attrition, as the valley was deepened to below depths reached by river channels. When they melted, the glaciers left behind unsorted deposits of rock and clay, called

"till", and water-sorted beds of sand and gravel. The loose material blocked older valleys, causing some streams to be deflected along novel and sometimes tortuous routes. A very large pile of glacial debris in central Connecticut backed up glacial meltwaters in the valley for many miles, creating an impressive lake of icy water which is referred to as "Glacial Lake Hitchcock" (Bain and Meyerhoff 1963; Campbell 1975; Hartshorn 1969). The lake collected fine sediments on its floor, and coarser deposits from meltwater and river erosion near its shores, so that the bedrock basin was, to an important extent, filled with sands, gravels, silts and clays. Beaches of the old lake are visible in places on the hills of Northfield, and the deltas built into it by rivers are prominent topographical features in the town (Campbell and Hartshorn 1980; Figure 2).

Eventually the debris dam was breached and the lake drained, an event not yet closely dated but estimated between 12,000 and 10,600 years ago (Curran and Dincauze 1977). Winds blowing across the exposed sediments built dunes downwind, against the flanks of the eastern hills (Figure 2). Streams on the old lake bottom coalesced into an early version of the Connecticut River, which flowed at an elevation far above its present channel. River erosion of the lake sediments was initially limited by a bedrock barrier downstream, which held the river at a high elevation. This barrier, called the Lily Pond Barrier, is now the rocky peninsula south and east of Barton's Cove, where the plunge pools of the ancient waterfalls are a tourist attraction today (Campbell 1975; Jahns and Willard 1942). The river expended energy in meanders upstream from the rocky barriers, cutting a wide floodplain at a high elevation. That floodplain is now represented by the high plains of Northfield--Moose Plain and Beers Plain and others at comparable elevations. Eventually, the river eroded out a route for itself around the Lily Pond Barrier and was then able to cut down through lake sediments in Northfield until it was again impeded by boulders and heavy gravel in the French King Gorge and, ultimately, by the bedrock barrier of Turner's Falls. The "meadows" of Northfield, awash during high floods, bear the same relationship to the modern river channel as the "plains" once did to earlier, higher channels. The proximity of the watersheds in the hills east and west of the river in Northfield explain the absence of any sizeable tributary streams in the town. Short, steep brooks drain the mountain slopes and upland swamps.

Northfield soils have developed by chemical and physical modification of unconsolidated deposits of glacial age or younger. Essentially none are developed directly on bedrock (Clark and Carlozzi 1976; Mott and Fuller 1967). For our purposes here, a simple three-fold soils classification suffices, discriminating among (1) the eastern and western upland soils, (2) the gravelly soils of the old lake shores and glacial terraces, and (3) the silty soils of the high and low river floodplains. The stoney, highly acidic upland soils are least desirable for agricultural purposes; the soils of the valley slopes and floors supported the farms of both native and immigrant peoples. These gross soils classes are also adequate for consideration of generalized life-zones in Northfield, and they will be so used in the section discussing plant and animal distributions.

The Field School employed a more detailed classification of soils



in attempting to test ideas about prehistoric land use in Northfield. Seven categories of soils were compiled on the basis of slope and drainage characteristics. These were ranked in terms of their expected potential for supporting prehistoric habitation. Table I summarizes the classification and ranking we used. The density potentials expressed there are the original estimates; they have not been fully tested against field data. (See Dincauze 1978a, 1979b; Dincauze and Meyer 1979 and Dincauze, Moore, and Root 1977 for fuller discussion of this approach.)

Archaeologically, the several soils impose special requirements for field work. The upland soils are mostly thin, subject to erosion and downslope movement, and often poorly drained. Archaeological sites will be poorly protected in such soils, unless they are covered quickly by sediments deposited on them by wind or water. Remains of human activity will be found incorporated into such soils only rarely--as the result of mass movement on slopes or intentional burial. Sites in these areas are likely to be superficial and disturbed. Other considerations (resource availability, ease of travel, microclimates, etc.) imply that prehistoric occupation in these areas is likely to have been sparse and transient, so that large sites are unlikely to be encountered (Dincauze 1978b).

The gravelly soils of the valley slopes are typically well drained. They are rich enough to have supported mixed forests and a diversity of wildlife. When reasonably level they were, in prehistoric times as in the present, preferred living areas. These light soils are subject to a variety of disturbances from the action of frost, tree roots, burrowing animals, wind and water, as well as mechanical disturbances imposed by people. Materials accumulating on their surface can be covered or worked down into the soils to significant depths by these processes. Archaeologists looking for the remains of human activities must often examine these soils to depths of a foot or more before they can be confident of their results. In areas of recent sedimentary accumulation the testing depths may have to be greater.

The alluvial soils of the valley floors--the "plains" and "meadows"--accumulated since the draining of the lake. In these soils, as well as in the dune sands of the eastern slope, remains of human activities may be incorporated at any depth. Archaeological testing must penetrate to sediments laid down by the melting ice or meltwaters, in the lake itself, or by a river channel, before conclusions about the presence or absence of human remains can be confidently supported. Archaeological materials have been encountered within alluvium deposited by the river flowing at the level of Moose and Beers Plain (Dincauze in prep.) as well as in the silts of Great Meadow. The alluvium, therefore, encloses remains of early hunting and gathering peoples as well as of the later farmers, who preferred the light silts for their cornfields. The alluvial soils have the highest potential of any in Northfield for disclosing the details of ancient lifeways, and the relative chronology of human events in the area (Dincauze et al. 1977).

TABLE I  
SITE OCCURRENCE POTENTIALS RANKED BY SOIL TYPES\*

<u>Soil Categories</u>	<u>Site Potential</u>
A, B	High
C	Moderate
D	Low
E, F, G	Unlikely; Special Purpose Only

Category A: Less than 8% Slope, Good or Excessive Drainage

Agawam fine sandy loams (AfA, AfB, AgA); Carver loamy coarse sand (CeB); Charlton fine sandy loam (CkB); Hadley silt loams (HaA, HaB); Hadley very fine sandy loams (HbA, HbB, HcA); Hartland silt loams (HdA, HdB); Hinckley sandy loams (HkA, HkB); Merrimac fine sandy loams (MgA, MgB); Merrimac sandy loams (MmA, MmB); Ondawa fine sandy loam (Of); Warwick gravelly fine sandy loams (WfA, WfB); Windsor loamy fine sands (WuA, WuB, WvB).

Category B: Less than 8% Slope, Some Drainage Problems or Well Drained, Stones

Charlton extremely stony fine sandy loam (CnB); Essex fine sandy loam (EfB); Essex very stony fine sandy loam and extremely stony fine sandy loam (EvB, ExB); Gloucester fine sandy loam, very stony sandy loam, and extremely stony sandy loam (GfB, GvB, GxB); Ninigret fine sandy loams (NfA, NgB); Peru very stony loam (PcB); Scituate fine sandy loam, very stony fine sandy loam, and extremely stony fine sandy loam (SeB, SfB, SgB); Sudbury fine sandy loams (StA, StB).

Category C: Less than 15% Slope, Well Drained

Agawam fine sandy loams (AfC, AgC); Charlton fine sandy loam, very stony fine sandy loams (CkC, CmC, CmC2); Charlton extremely stony fine sandy loam (CnD); Essex fine sandy loam, very stony fine sandy loam, and extremely stony fine sandy loam (EfC, EvC, ExC); Gloucester fine sandy loam and sandy loam (GfC, GmC); Gloucester very stony sandy loam and extremely stony sandy loam (GvC, GxC); Hinckley sandy loam (HkC); Merrimac fine sandy loam and sandy loam (MgC, MmC); Scituate fine sandy loam, very stony fine sandy loam, and extremely stony fine sandy loam (SeC, SfC, SgC); Windsor loamy fine sand (WuC).



TABLE I (continued)

Category D: Greater than 15% Slope, Well Drained

Agawam fine sandy loam (AfD); Charlton very stony fine sandy loam and extremely stony fine sandy loam (CmD, CnE); Essex fine sandy loam, very stony fine sandy loam, and extremely stony fine sandy loam (EfD, EvD, ExE); Gloucester fine sandy loam, very stony sandy loam, and extremely stony sandy loam (GfD, GvD, GxE); Hartland silt loam (HdD); Hinckley sandy loam (HkD); Merrimac fine sandy loam and sandy loam (MgD, MmE); Windsor loamy fine sand (WuE).

Category E: Less than 15% Slope, Poor Drainage

Limerick silt loam (Lk); Limerick-Saco silt loams (Ls); Ridgebury fine sandy loams (RdA, RdB, RgB); Rumney fine sandy loam (Ru); Saco silt loam (Sa); Scarboro fine sandy loam (Sd); Suncook loamy sand (Su); Swanton very fine sandy loam (SzA); Walpole and Wareham fine sandy loams (WaA, WaB); Whitman extremely stony fine sandy loam (WtA); Winooski very fine sandy loam (Ww).

Category F: Mucks

Mucks (Ms, Mu).

Category G: Shallow Soils with Bedrock Close to Surface

Hollis fine sandy loams (HmB, HmC); Hollis very rocky fine sandy loam, and extremely rocky fine sandy loams (HnC, HoD, HoF); Shapleigh fine sandy loams (ShB, ShC); Shapleigh very rocky fine sandy loams (SkC, SkD); Shapleigh extremely rocky fine sandy loams (SmC, SmF).

\*All soil types as given in Mott and Fuller 1967. Table prepared by M.T. Mulholland, 1976.

## CLIMATE, VEGETATION, AND WILDLIFE

Modern climate in Northfield is generally cool-temperate continental in type, with mean annual precipitation over 40 inches, temperature generally ranging from 14<sup>o</sup> F (mean January minimum, to 84<sup>o</sup> F (mean July maximum) (Clark and Carlozzi 1976:40-43), and a growing season of around 150 days. Northfield's considerable relief creates a significant amount of local variation around these means.

In the past 13,000 years, Northfield's climate has changed dramatically, from total absence (under glacial ice), through post-glacial warming to averages higher than we experience today, to a recent cooling trend. These changes are marked for us in the fossil record of plant growth, which is read from deposits of ancient pollen (Davis 1969; Davis et al. 1980).

When Glacial Lake Hitchcock filled the valley, plants in the area were small arctic shrubs of kinds now known from arctic and high mountain tundras (cf. Miller and Thompson 1979). The animals to be expected in such an environment include caribou, lemmings, owls, foxes, and perhaps the woolly mammoth. No direct evidence for such creatures has been recovered in the Northfield area.

With improving climate and developing soils, cool-tolerant tree species such as spruce became established in the area, and mastodon and moose may have joined the earlier animal populations. Evidence from north and south of Northfield implies that small groups of human hunters and foragers were then in the area (Curran and Dincauze 1977); however, no direct evidence for this has been reported from Northfield at this time.

The forest composition changed by the addition of pine, hemlock, and some hardy deciduous species (birches, maples, and others). The animals resident in such forests and on the meadows and swamp edges would have included moose, beaver, various birds, perhaps some deer. It is likely that spawning fish were moving upriver by this time (ca. 9,000 years ago), but it is not known yet whether they could go as far as Northfield. The river was apparently still held at a high elevation by the bedrock at the Lily Pond Barrier, and the ability of anadromous fish to master the violent waterfalls there is doubtful.

By 7,000 years ago the climate was at or above modern temperature averages, and the seasonal storm tracks were at or near their present locations. The forests included many hardwood species, among them nut-bearing oaks and beeches. In these forests, deer should have been the dominant herbivores, with black bears, turkeys and other animals comprising a community much like that in the area before the modern environmental disturbances. Seasonal migrations of birds were probably well established along the valley flyway, with passenger pigeons, and geese and other waterfowl enlivening the air twice a year (Dincauze and Mulholland 1977). Salmon and shad runs were using the river at least to Turner's Falls by this time (Thomas 1980).



Subsequently, hickory and chestnut enriched the mast foods in the forest. About 3,000 years ago a hemisphere-wide cooling trend began, and average temperatures dropped somewhat from their post-glacial highs. The climate has since fluctuated within a subtle downward trend, with a few centuries of special warmth around 1,000 years ago and a markedly colder period (the "Little Ice Age") following after about A.D. 1400. The initial English settlement of the town took place during this time of bitter winters.

The distribution of forest communities in Northfield is likely to have been spatially complex in the past, as it is now. Variations in relief, aspect (the difference between north-facing and south-facing slopes, for instance), and soils determine the growing conditions which favor some plants over others at any given place. Through time in Northfield, there would always have been communities in the uplands which were more cool-tolerant than species in the valleys, probably more kinds of understory plants in the valley, and a spotty distribution of wetlands communities. The high terraces on the valley slopes were probably the best areas for the important nut trees, once they became established. Using soils maps, it is possible to generalize about plant and animal communities in Northfield through time--their gross composition, distributions, and relative productivity. The Field School students prepared many such estimates for areas they investigated, and compared the expectations to the distributions of prehistoric sites in time and space. Human geographers do that for contemporary communities; modern Northfield is represented in studies by MacConnell (n.d.) and Clark and Collozzi (1976).

#### PREHISTORIC AND MODERN LAND USE

The Ice Age and recent landforms of the valley trough have been the preferred human habitats since they became available. In general, they were settled from higher to lower elevations through time, because of the progressive erosion of the valley since the draining of the glacial lake. The earliest inhabitants so far identified in Northfield used a land surface near a high river channel at King Philip's Hill, sometime between 10,000 and 6,000 years ago (Dincauze in prep.), when the Lily Pond Barrier still blocked the river from downcutting. Implements used there were washed or thrown into the river and became incorporated into the alluvial deposits, a circumstance which establishes their contemporaneity with the river at that elevation (ca. 260 ft.). Traces of still earlier inhabitants, the Paleoindian hunters of 10,000 to 11,000 years ago, have not been identified yet in Northfield. If in fact the glacial lake had not fully drained by that time, or if the early Connecticut was meandering on the swampy lake bottom, the immediate area may have been only minimally attractive for human settlement, with only the gravelly glacial (kame) terraces and the rocky uplands available for occupation. This is in contrast to areas downstream, where Paleoindians left traces of their activities on high river terraces in Gill and Hadley, and in wind-deposited sands on the drained lake floor in South Deerfield. Further geological and archaeological investigations may clarify these early relationships between human groups and topography.

The high river terraces in Northfield--the several "plains"--were apparently the preferred areas for occupation from the time of their initial exposure to the present. All archaeological sites more than 3,000 years old are on the plains. Younger sites also occur at lower elevations, on land surfaces which were formed as the river cut deeper into the soft lake beds. On the "meadows"--the modern floodplains--archaeological sites of the last 2,000 to 3,000 years occur. We know very little about the occupations of the meadows, because of the complexity of the alluvial stratigraphy and landforms and the difficulty of investigating sites in flood deposits. Because we know that the area was inhabited since before the river built the lower floodplains, we must acknowledge the possibility of sites occurring in those river deposits at any depth (see Chapter 4).

The people who lived on the valley terraces could have utilized resources from all of Northfield territory and beyond. The valley and uplands offered different resources, partly complementary and partly supplementary (Dincauze 1978b; Dincauze, Moore, and Root 1977). The attractions of the valley itself were significant. The relatively low and level land surfaces, and the waterway, provided preferred north-south routes for travel and communication. People living near the river were on "Main Street." The climate of the valley is less extreme than that of the hills, usually milder with some special and seasonal exceptions. The soils are generally well-drained, making for comfortable living areas. The deep soils of the meadows and terraces supported diverse and highly productive forest communities, which attracted a variety of wildlife. Humans probably exploited these areas of rich plant and animal resources preferentially. The river, its tributaries, and the floodplain swamps yielded great quantities of anadromous fish in season (Moore and Root 1979) and probably reliable supplies of pan fish throughout the year. Migratory waterfowl were another valley attraction. The best land for native horticulture was the alluvial soils of the ancient and recent floodplains. Clay for cooking pots could be dug from the banks of streams and the river where it outcropped. And, although we do not know exactly why, the dune sands on the eastern high terraces seem to have been attractive areas for some recurrent activities of the native peoples from at least 4,000 years ago.

The upland resources supplemented and complemented those of the valley. Rocks were more readily available there. Among the economically important types for local people were the diabase ("traprock") of ancient volcanic origin, which outcrops in East Northfield, quartz from pegmatites in outcrops or ubiquitous in glacial deposits. Diabase was a preferred material for heavy woodworking and pounding tools; quartz was convenient, if not quite ideal, for chipped stone cutting tools and weapons tips. It remains to be learned whether the local arkose provided iron oxides for ritual pigments, as arkose elsewhere in New England did. Upland swamps may have been attractive areas for food collecting, and for winter hunting of yarded deer. Stands of nut-bearing trees would have offered additional mast foods over those available in the valley, and may have been especially favored by turkeys avoiding the human neighborhoods on the terraces. Upland game birds, of course, would be found in the hills.



On the basis of these resource distributions and diverse attractions between the valley and the hills, the Field School archaeologists expected to find most prehistoric archaeological remains on the terraces and floodplain, where the main living sites would have been clustered. In the rocky hills, we expected to find small campsites of transient hunters and food gatherers and rock collectors, stopping overnight in their quests. In fact, while our expectations for the valley environments were abundantly met by sites large and small of many different ages, we were unable to confirm the presence of any sites at all in the hills. We see two possible explanations for this situation. It may be that Northfield hills are so close to the attractive river valley that it was seldom if ever necessary for people to stop there, when they could return to friends and families in the valley. This may be in general true, but cannot be construed to mean that no people, at any time, lived in the hills. The second reason for our failure to find sites in the hills is probably the real one. We spent only 11 crew-days actively looking and, given the small expected size and wide dispersal of the kinds of sites we were looking for, that was not time enough to produce positive results. We have Mary Rowlandson's testimony for encampments in Great Swamp (Rowlandson 1913), and the arguments which led us to expect sites in the hills remain sound. Sites in the hills will be rare, and usually small, but they are there. When found, they will tell us more than we know about life and resources in the uplands.

The native peoples, like people everywhere, modified their environments both purposively and inadvertently. Their collecting of food and raw materials affected species compositions and densities, by selective predation and harvesting. As competitors with the major carnivores--bears and wolves--they probably kept those populations lower than they otherwise would have been. Villages and campsites were erected in natural or artificial clearings; the trampling of feet and the accumulation of materials and refuse changed the local soil characteristics, so that plant communities for centuries afterward reflected the changes. People dug pits to store food and other valuables, to dispose of wastes, to prepare earth ovens, and to bury their dead. Some artificial propagation, re-locating, and encouragement of useful plants probably took place even before domesticated plants were tended (cf. Barber 1977). The creation and frequent moving of native gardens had a significant impact upon the landscape and upon the nature and location of plant and animal communities (Cronon 1983; Temple and Sheldon 1875:60). Seasonal burnings to create better deer habitats and to keep undergrowth down for ease in hunting and traveling was a major technique for domesticating the landscape at the time of European contact (Day 1953); there is no reason that it could not have been practiced for very long times before.

When the English immigrants came to Northfield, they recognized the effects of the native peoples' landscape-modifying activities and, moreover, acknowledged that they could profit from them (Temple and Sheldon 1875:60). Northfield's history shows, in fact, many interesting parallels between Indian and later Euro-American land-use practices (Thomas 1976). The modern center of town lies just north of where the Indian village Squenatock is believed to have been (Temple and Sheldon 1875:2, 38-39;

Figure 1). Most residential and commercial development has occurred on the river terraces, as was the case with the original settlers (MacConnell n.d.; Northfield Planning Board 1977). Farmers still prefer, and profit on, the plains and meadows where Indian gardens flourished. The hills are mainly open land, where forests and wildlife may be readily encountered and if not wildlife, then cows and cattle, replacing deer (Clark and Carlozzi 1976; Northfield Planning Board 1977). Some commercial quarrying of diabase in Northfield village and East Northfield (Balk 1956) expands the similarities.

Historic and cultural resources of ancient and modern Northfield frequently converge in the same locales. In this way, more recent human endeavors replace the more ancient, leading to some highly predictable kinds of losses. Modern residential and commercial sites overlies and often destroy older ones, both historic and prehistoric. Mechanized plowing cuts deeper every year into the sites of earlier dwellings, farms, and extractive activities. Modern traprock quarries obliterate traces of ancient Indian workings. Mills tapping the water power of streams sit directly on the old fishing stations at the falls. Sand and gravel quarries on the glacial lake margins bite into the best-drained soils, which were frequently the preferred sites for habitation and for burials. Because these losses are to an extent predictable, it is possible for Northfield to plan for the protection or recovery of remains of its own past, should it choose to do so (Northfield Planning Board 1977).



## CHAPTER 4

### NATIVE AMERICAN CULTURE HISTORY

Archaeological information is accumulating rapidly in the northeastern United States and it is hoped (and expected) that the present understanding of Native American culture history in this geographic area will continue to be reworked and modified as new evidence comes to light. Beyond a basic presentation of the prehistoric and early historic cultural chronology as currently accepted for southern New England by archaeologists, this chapter attempts to clarify, to an extent, the role of the Northfield area in prehistoric and early historic human adaptation. This approach specifically is based on an interest, currently popular in North American archaeology, in explaining the development of cultures by tracing how they have evolved as integrated systems interrelating with natural environments (Trigger 1978).

It may aid the reader to think in terms of humans interacting with their environment by the use of culture--our adaptive mechanism, so to speak. Anthropologists study many aspects of human behavior (political, social, religious, economic, technological, and so forth). It is assumed that these areas of human cultural behavior are connected in a systematic manner, i.e., a change in one area will eventually result in modifications, however slight, in any number of other cultural "sub-systems." Obviously some kinds of human cultural behavior are more amenable to archaeological excavation and interpretation than others--it is rather difficult, to say the least, to excavate intact religious beliefs.

However, the prehistoric archaeologist does assume, on the basis of the notion of human cultural systems seen as integrated, dynamic sets of behavior, that the bits and pieces of physical evidence commonly found (stone or bone tools, ceramics, burials, living floors, fireplaces, food remains, and so on) can lead to inferences as to what a culture may have been like as a whole and how it fit into and influenced the natural environment. Obviously, humans living in the Connecticut River Valley today make decisions all of the time regarding how the environment is to be used and the manner in which use is to be initiated, maintained, and completed. Native Americans prehistorically were involved in this same process of decision-making, despite technologies, ideologies, social systems, and economies different from what many contemporary people are accustomed to. The geomorphic units shown on Figure 2 in large part represent contrastive environments that would have been used differentially

by prehistoric peoples, even as they are today. This discussion of prehistoric and early historic aboriginal lifeways in southern New England and specifically the Northfield area is offered to point up the parallels and differences in land use over time.

### SUMMARY OF REGIONAL PREHISTORY

The following general summary of New England prehistory, especially as it applies to early activity in the Northfield area, is condensed from several sources (Day 1978, 1981; Dincauze 1977, 1978b, 1980; Dincauze, Moore and Root 1977; Funk 1978; Goddard 1978; Temple and Sheldon 1875; Thomas 1971, 1973, 1976, 1979b; Tuck 1978; and others). The material remains of these human activities have enabled archaeologists to define periods of human cultural development--as human adaptation changed with changing social and natural environmental conditions, subsistence, settlement, and technological practices differed in emphasis at different times and places. These differences have essentially led to many classification schemes for ordering New England prehistoric culture history. The classification and dates of duration of periods followed in this chapter are fairly common at this time. The framework is as follows: Paleoindian; Early, Middle, and Late Archaic; Early, Middle, and Late Woodland, and Historic,

Paleoindian: 10,500-8000 B.C.

The earliest human inhabitants of New England, the Paleoindians, have conventionally been considered big-game hunters. Caribou, moose, and mastodon were probably potential game animals. However, the Paleoindians must have hunted smaller game and gathered plant foods when they could (Curran and Dincauze 1977; Snow 1980:150).

There was a rapidly changing environment, with glacial lake levels dropping, sea levels rising or dropping, depending on the place, and tundra landscapes being replaced by spruce, birch, and various pine species. Seasonal availability of food resources may have been relatively less predictable over the generations, given the pace of change. Therefore the Paleoindians probably travelled in small bands, moved frequently, and based this movement on game movement and abundance of other food sources (Snow 1980). Sites from this period are generally shallow and small, reflecting the small group size and nomadic lifestyle (Dincauze 1980).

These sites are characterized, technologically, by the presence of fluted projectile points, difficult to manufacture and exhibiting a high degree of craftsmanship. Also found are flaked stone knives, graters, drills, scrapers and utilized flakes (Funk 1978; Griffin 1967). Several Paleoindian "find spots" are known within the central Connecticut River Valley (Curran and Dincauze 1977:334). Greenfield, Gill, Montague, and Deerfield have produced isolated finds, and Hadley and Deerfield have each a Paleoindian site. Dune areas (Figure 2) may in the future yield Paleoindian remains in Northfield--they would have been dry and warm spots around the drained glacial Lake Hitchcock.

Much remains to be studied in terms of the relationship between early arrivals in the Connecticut River valley area and the physical environment



at the time. Understanding human adaptation at this early time period is difficult for the archaeologist, significantly because of problems of preservation of Paleoindian artifacts over such a long time and the difficulty of locating the relatively ephemeral camps. The paleoecology of New England is still being reconstructed.

#### Early and Middle Archaic Periods: 8000-4000 B.C.

Peoples of the Archaic period are believed to have followed hunting-fishing-gathering adaptations to the biotic conditions associated with the early postglacial climate (Funk 1978:19). Since the big game animals of the tundra and spruce woodland were basically extinct by 8000 B.C. in the Northeast, the Archaic peoples relied heavily on deer, bear, smaller mammals, birds, turtles, fish, and shellfish, with nuts, seeds, and other plant foods.

These peoples' sites are generally more numerous and larger than earlier ones reflecting denser human population perhaps, but also a more abundant and stable resource base. As a consequence of a new way of life, territoriality and regional diversity are more evident in Archaic period artifact assemblages than in those of the Paleoindians becoming very pronounced by Late Archaic times, after 3000 B.C. (Funk 1978:19).

The Early and Middle Archaic Periods (8000-4000 B.C.) are relatively well represented in Massachusetts (Dincauze and Mulholland 1977). Sites are found on large rivers, on inland ponds and swamps, and on the New England coast. Sites vary in size, due to different sorts of seasonal adaptations. Tool types include woodworking and milling tools made of ground stone, spear-thrower weights, and fishhooks.

Questions and problems remain in relation to Early and Middle Archaic adaptations in Massachusetts (Dincauze 1980; Thomas 1980). Clarification of chronology, subsistence, and economies is yet beyond reach. Northfield archaeological resources may be of aid in terms of these general queries as at least one area (King Philip's Hill) has produced material that may date to this early period.

#### Late Archaic: 4000-1500 B.C.

This period represents a time of complex interrelations between people and their environment. There may have been several interrelating yet separate traditions in New England during this time (Dincauze 1975). 1980). The climate was warmer than it is today--the biome seems to have been one of the most conducive to human utilization up to that point (Tuck 1978:34-35).

Deer, black bear, raccoon, opossum, rabbit, otter, turkey, goose, passenger pigeon, various waterfowl, alewives, swordfish, sea mammals, shellfish, anadromous and freshwater fish are among the widely varied subsistence resources available to the coastal and interior-riverine late Archaic peoples, depending on where and when these resources were available. Population densities were probably fairly high (Dincauze 1979b:37).

The tool complex consisted predominately of narrow, thick bladed projectile points and knives, choppers, hammerstones, axes and adzes. Some very beautiful

stone implements were made for special purposes (Tuck 1978:35). During the Late Archaic steatite (soapstone) vessels became common artifacts.

The peoples of this time undoubtedly were grouped in small, mobile bands and moved seasonally within prescribed territories, i.e., a centrally based, seasonally wandering settlement pattern in which people utilized available resources (Snow 1980; Tuck 1978:35). Sites are larger and show a variety of locations, moreso than during earlier periods. The Northfield survey produced Late Archaic materials at several sites. The "Council Fires" site produced Late Archaic, small stemmed, blue quartz points. Late Archaic occupation is also inferred for sites along Four Mile Brook, on Moose Plain, and at other sites on the high terraces.

### Woodland Period

Approximately 3,000 years ago a new sort of manufactured article appeared in the prehistoric populations inventory--fired ceramic pots. This new introduction occurred several hundred years later in Massachusetts than it did to the west in New York. The Woodland period begins between 1000 and 300 B.C., and ends with the Historic Contact period.

By Late Woodland times, after ca. 900 A.D., prehistoric peoples were involved in a transition to an agricultural economic base. One result of this was a change in the distribution of peoples, and perhaps an increase in population in southern New England (Dincauze 1979b; Snow 1980). During the Early and Middle Woodland periods in Massachusetts (ca. 500 B.C. - A.D. 1 and ca. A.D. 1 - 900 respectively), population levels were seemingly maintained at lower levels than during the Late Archaic period and succeeding Late Woodland times, a phenomenon yet to be explained (Dincauze 1980).

Subsistence practices do not change radically from those of the Archaic period during the Early and Middle Woodland periods. Seasonal hunting and gathering continued to be the norm with deer hunting, fishing, shellfish collecting, and plant gathering being prime pursuits. Settlement types include small, seasonal camps (cf. Thomas 1979a), semi-permanent camps/habitation sites, cemeteries, and workshops. There is no evidence of plant domestication at this time, although it was being practiced in the Ohio region. Sites of these periods are rare in Northfield, where they may be buried in alluvium.

During the Late Woodland period maize agriculture was developed into a major supplement to the Native American diet in the Northeast in those areas where it could be grown successfully. Larger, more permanent villages were built on the higher ground above river floodplains (defense was also a probable factor in such location decisions). Hunting and fishing were still significant in the overall subsistence base, however. It is during the Woodland period that the bow and arrow begins to be used and smoking pipes become more common.

Northfield has at least two sites at the present time which may lead to further understanding of the Woodland period in the central Connecticut River Valley. A site on Great Meadow has produced sherds of pottery of an indeterminate type and non-diagnostic stone debitage; others near Bennett's Meadow have also produced pottery fragments. These areas are on the low alluvial terraces and floodplains ("meadows") and can only be said to date sometime after 3,000 years ago.



## Historic/Contact Period

The early history of the town of Northfield presents the investigator with a picture of an area heavily used by the Indians (Temple and Sheldon 1875). Unfortunately, to date, surveys by the University of Massachusetts at supposedly significant sites have yielded either nothing in the way of material remains or material thousands of years old (Dincauze 1977, 1978b; Dincauze, Moore, and Root 1977).

The "Council Fires" site, as stated earlier, has produced Late Archaic, small stemmed points. So-called "graneries" (Temple and Sheldon 1875:37,38) on both sides of the river have yielded no evidence whatsoever to limited investigations as to their supposed aboriginal purposes. The site at Four Mile Brook (Temple and Sheldon 1975:35) has given indications only of being a Late Archaic site and the ditch and bank features at King Philip's Hill are 17th-century English settlement/boundary structures (Dincauze in prep). The Mill Brook area (Temple and Sheldon 1875:40), supposedly the site of "Coassock", has yielded no evidence other than a single quartz flake, nor were artifacts of prehistoric age found at Pauchaug (Dincauze et al. 1977).

There are several possible explanations for this apparent disparity between town history and contemporary archaeological recovery. The site survey may need to be expanded and become more comprehensive in the future; that is, the lack of evidence may be a matter of inadequate coverage of potential site areas. It may be that development of the town and avocational collecting at the sites have obliterated evidence to the point where much information is irretrievably lost. One hypothesis, however, may be that Native American land use and settlement patterning in the area of modern Northfield may have been different from that reconstructed by Temple and Sheldon. It is this latter hypothesis to which the narrative now turns and will try to elucidate.

Scholars seem relatively agreed that the Indians residing in the area originally incorporated as Northfield in 1672 were probably speakers of Western Abenaki and were known to various early explorers and colonists as either Sokokis or simply as Squakheags after their major habitation site at what is now Fort Hill in Hinsdale, New Hampshire (Gooddard 1978:71; Temple and Sheldon 1875:41; Thomas 1973:34, 1979b). In fact, the modern Western Abenaki dialect which survives may indeed be a continuance of the Sokokis dialect brought to and established at St. Francis, Quebec, by Central Connecticut Valley Squakheag refugees during the mid-1690s (Day 1978, 1981).

A reasonable population estimate for the pre-plague numbers for all Western Abenakis may be about 5,000 persons on the upper Merrimack River, the upper Connecticut River, and Lake Champlain, with the earliest known Western Abenaki villages being Penacook, Squakheag, and Missisquoi (Day 1978:152-153). Peter Thomas's (1979b) research in the Middle Connecticut drainage has yielded figures that indicate a 1663 (post-plague) population estimate for communities between Springfield and the village of Squakheag between 1764 and 2200 individuals (1979b:308). This post-epidemic population may well include remnants from both the middle and lower Connecticut as well as refugees from elsewhere in southern New England (Snow 1980:41). There may have been approximately 500 persons for Squakheag (Thomas 1979b:308 [1663 estimate]).

The disastrous 1663 war with the Iroquois may have been the beginning of a major exodus from Squakheag (Day 1978:150; Thomas 1973:29). However, Sokokis participated in the unsuccessful joint attacks by the southern New England Indians on the Mohawk in 1669, and some were still close enough to Squakheag to participate in King Philip's War in 1675 and to sell land to the English in 1696 and 1687 (Day 1978:150). If the Mohawk raid in 1663 had, in fact, forced some of the Squakheags/Sokokis to leave the Northfield area and resettle elsewhere, perhaps in the Merrimack valley, the dislocation in the eastern part of New England following King Philip's War may have forced them back to their old home territories (Thomas 1973:31).

In fact, Thomas (1973:30), on the basis of an analysis of two Squakheag-English deeds dating from 1671 and 1673, has postulated that small family units were inhabiting both sides of the river. According to Thomas, individual land holdings were recognized (different Squakheags signed the 1671 and 1673 deeds which encompassed different land holdings), and Squakheag population along this section of the river in the early 1670s was very small, perhaps no greater than 20-30 individuals. Add to this another salient fact--the land sale of 1687 virtually excluded the Squakheags from settlement south of the Ashuelot River (Thomas 1973:32). There may have been a reemergence of the old 1660s community, but these individuals were forced to concentrate north of Northfield, presumably.

Excavations by Thomas (Thomas 1971, 1973, 1979b) at the Fort Hill site have shown a scarcity of agricultural produce. Finally, add to the picture the Western Abenaki/Squakheag seasonal activities as sketchily observed during the contact period (Day 1978:153-154; Thomas 1976).

In the spring, runs of fish were trapped in large quantities using weirs, traps, spears, hooks, and nets. By May, corn, beans, and squash were planted. During the summer weeding cornfields, fishing, and berry collecting occupied the people with often lengthy sojourns at lakes for fishing, which were broken by return trips to the central villages to weed and tend the fields. In the fall medicinal plants and herbs were collected, as well as nuts, and agricultural produce was harvested and stored. During the Fall hunting began for deer, bear, moose and various fur-bearers. Small bands of hunters or single families established hunting lodges at some distance from the main settlement. From December to mid-March the larger settlements were again populated and festivities occurred at this time. Stored food was a key subsistence item, supplemented by hunting. In February the ice broke up and the spawning runs began the cycle over again.

According to Thomas (1976) the Indians' agricultural activities were relatively small scale in nature, "slash and burn" techniques of land clearance being "land extensive" and "labor intensive." The need to maintain a high proportion of fallow to productive fields in this system set limits on settlement densities in the central Connecticut River Valley, keeping those densities fairly low.



## CONCLUSIONS

It is possible that the aforementioned disparities between cherished Northfield historiography (Temple and Sheldon 1875) and modern archaeological notions regarding aboriginal land use patterns may be the result of inadequate or misplaced surveying or perhaps modern development with its attendant, unfortunate disregard for archaeological resources as other than mere curiosities. On the other hand, the hypothesized land use patterning may indeed be borne out through this archaeological research in concert with the ethnohistoric evidence. Decimation through epidemics, wars with the Iroquois Mohawk and early colonists, and subsequent dislocation and relocation, selling of precious agricultural land (considering the characteristics of their horticultural method this was an important decision), low overall population density, and the very nature of the seasonal round may all have dictated a much more sporadic and intermittent Squakheg/Sokokis adaptation in the area than that proposed and embellished by Temple and Sheldon. Gordon Day's ethnohistorical research at St. Francis is leading him to such conclusions (Day 1981).

This, of course, does not mean that Northfield ceases to be of archaeological interest. Most of the sites surveyed on the plains are greater than 3,000 years old. Older sites may also reside beneath river alluvium, even at high elevations. The span of time humans are known to have used this portion of the valley of the Connecticut has been greatly expanded by the site investigations. The sites surveyed to date may seem rather small and insignificant compared to Temple and Sheldon's visions of large, palisaded villages. However, the value of small sites is great, particularly if we truly wish to understand the entire gamut of prehistoric settlement and subsistence activities in the Pioneer Valley over time. These sorts of sites will yield a discrete sample of specific activities at a given moment in time and therefore give the archaeologist precious insight into the adaptation of the population. And, of course, continued archaeological resource awareness in the community can only improve our understanding, both of the early adaptations, and the relations between Squakheg and English settlers.

## CHAPTER 5

### THE MANAGEMENT OF ARCHAEOLOGICAL RESOURCES

Archaeological sites and artifacts, and the networks of human interactions which produce them, may be as recent as yesterday, and as old as the appearance of the first human explorer on the deglaciated landscape. Archaeological resources may contribute unique information about both prehistoric and historic times; not their age, itself, but their information content makes them valuable. The body of this report, Chapters 1-4, emphasizes the archaeological remains of the native people of the valley, because that was the emphasis of the Field Schools. Remains of the early English settlements of the town obtruded intimately into our investigations. For several decades in the late 17th century and into the early years of the 18th, Northfield's landscape was occupied in rotation by groups of native peoples and of English settlers, displacing each other. King Philip's Hill, listed on the National Register of Historic Places, commemorates those years, and reminds us in a special way how difficult it may be to disentangle the physical remains. There is still much to be learned about Northfield's past that is unique to the archaeological record, for all its duration. Archaeological sites of any age deserve respect for their information value, and serious consideration for preservation and protection for the sake of that record.

Truly effective protection of archaeological sites must begin with community awareness and action. Programs and legislation at the state and federal levels of government exist to aid and support local concern, but are inadequate without it.

The essential first steps in a program of community action are: (1) recognition of the diversity and significance of heritage values incorporated in archaeological resources, and (2) commitment to the preservation and development of the sites in the public interest. Once the commitment is made, a community can do a lot on its own, and can, when necessary and appropriate, avail itself of the state and federal help that exists to support preservation goals.



## RECOGNITION OF ARCHAEOLOGICAL RESOURCES

Resources for the study of the unwritten human past are conventionally defined by membership in one of three classes--sites, collections, and skeletal remains. The study of each requires special skills and equipment, and each yields data sets that are both unique to the class and complementary to each other. Northfield has yielded representatives of all three classes, and it is our expectation that all three will continue to be important.

### Sites

The locations of human endeavor on any landscape, for any period of time, are not randomly distributed. While there may be a measure of arbitrariness to the initial location of an undertaking, in general people have reasons for doing what they do and for selecting the place at which they do it. Therefore, there are recognizable patterns in the distribution of archaeological sites across space, patterns that vary with the time in which they were formed and with the range of activities involved in their formation. These patterns, complex and subtle at the time of their creation, tend over time to be simplified as elements are lost to the destructive forces of natural and cultural processes. For these reasons, and because of the increased complexity that was imposed on human activities by the Industrial Revolution, the further back we look in time, the simpler the patterns of landuse appear.

The early historic patterns of landuse in Northfield are not well understood. They have been obscured by both folklore and forgetfulness, so that it may be uniquely the methods of the archaeologist that can restore them to our awareness. The case of King Philip's Hill, with its Second Settlement trenches, is a good example of such obscurity, as is the progressive mythification of early 19th-century farm outbuildings of unmortared stone (Cole 1982; Dincauze 1982). However, the 1976-1977 field schools did not focus on historic Northfield, and therefore those remains are referred to only superficially in this report. Much interesting work remains to be done in respect to early Northfield.

Prehistoric sites in the town have been identified and are known to represent at least the last 8000 to 9000 years. Sites older than 6000 years are difficult to find in Northfield, and difficult to interpret. We are confident of only one site of such antiquity, located in the vicinity of King Philip's Hill. The oldest sites in the town have much to tell, not only about human adaptation to a landscape very different from that of today, but also about the processes by which today's landscape was sculpted. Possibly the entire Connecticut River trench in Northfield was excavated by the river during the period of human occupation, since prehistoric artifacts were included in the alluvial sediments of one of the very highest, and therefore oldest, river terraces.

Prehistoric sites known to date (1984) occur on landforms related to the river or close to the river on glacial and post-glacial sediments. Our expectations of finding small special-purpose sites in the uplands were not rewarded during the period of our research; however, such sites almost certainly do exist. The known sites occur on the kame terraces and deltas, old Lake Hitchcock beaches, and dunes of the valley margins, and on the alluvial terraces cut into the lake sediments by the Connecticut River and its tributaries (Figure 2). In general, the lower the terrace surface, the younger the site resting on it. The largest and oldest sites we were able to identify are on the high terraces overlooking the trench--on the several Plains. These areas are precisely those which are expected to receive the greatest amount of development in the near future (Figure 3).

On the meadow surfaces (there are different levels of these), sites are usually younger than 3500 years. The age relationships tell us something about the rate at which the river cut down its valley in Northfield after slipping away from the rock sill at Barton's peninsula, where it was held at a high level for many years after the draining of the glacial lake. We also see that the Native peoples who were farming, mainly after about A.D. 800, preferred the rich alluvial soils of the meadows, which were periodically renewed by flooding. Because their homes were not permanent, costly constructions, the people were not endangered by the lowland floods. People could be elsewhere during flood time, returning in good season to enjoy the benefits brought by the river.

The small upland sites that we expected to find in the hills (Dincauze 1978) still elude us. If there, they will be found relatively close to running water, on soils of good drainage. Archaeological resources associated with the ruins of the 19th-century farming hamlet north of Orange road are obvious and, like others of their age, are subject to damage by bottle collectors and casual curio-seekers. Management of archaeological resources in the hills should be coordinated with the managers of the various parcels of State Forest land.

The presence of an archaeological site is indicated by concentrations of objects made or used by people, and by modifications to the subsoil. Pits, hearths, house floors, etc., are good indicators of human activity, and such features can be highly informative to trained observers. The portable artifacts which contemporary people are likely to pick up and take home are highly informative as long as they remain in place in the site soil. Once removed with little or no record of their context, they lose much of their information value. The value loss is incremental--objects in a plowzone have been moved, but not to any great distance. They retain much information. Exposed objects removed by well-designed collection techniques and carefully recorded lose little. Objects removed to labeled collection boxes retain somewhat less information. Objects taken home to show friends and left around the house, gradually become separated even in memory from their find-spots, until they become mere curiosities devoid of any larger meaning. The preservation in place



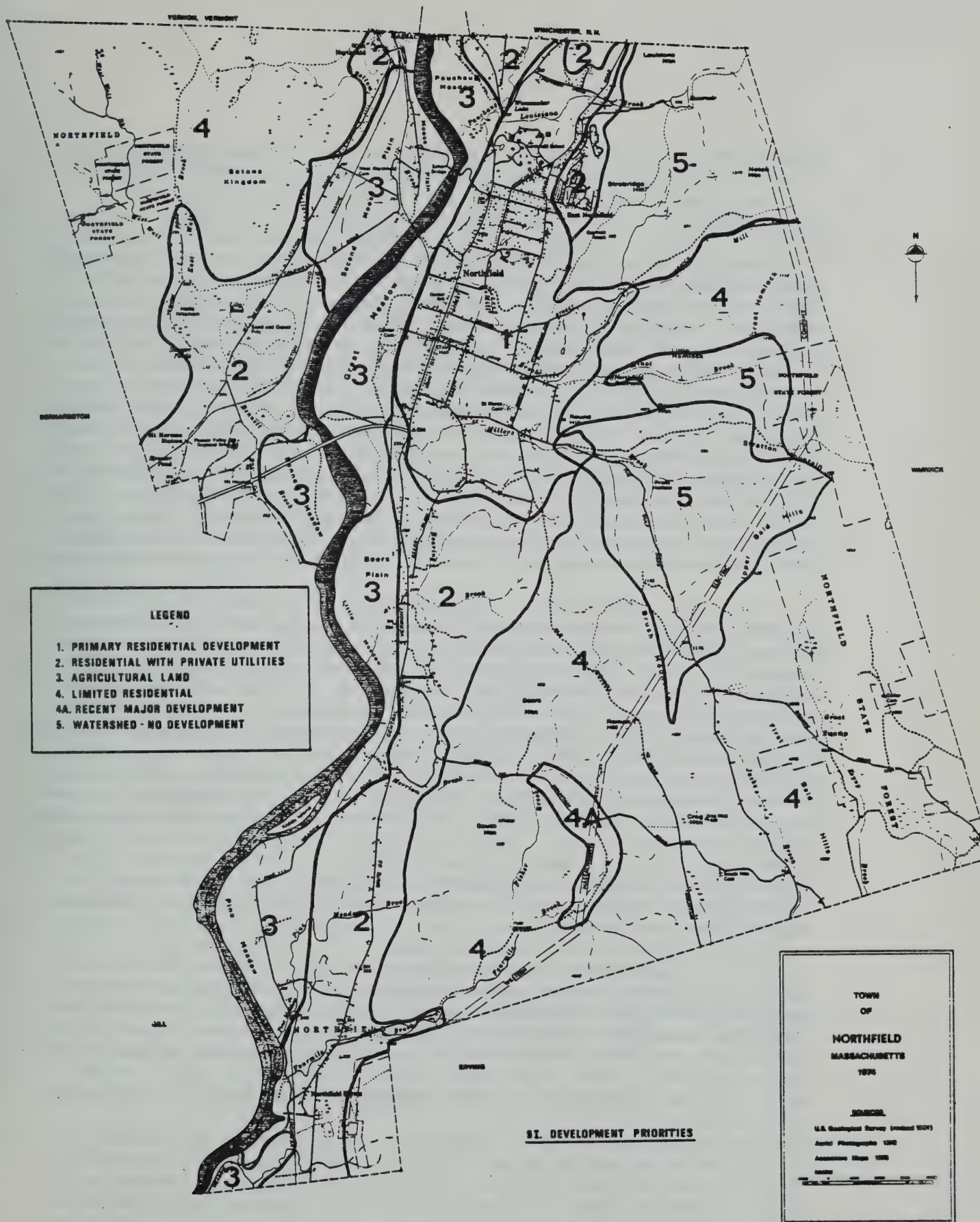


Figure 3

Anticipated future land uses in Northfield. From Northfield Planning Board (1977:108).

of archaeological sites has a high priority for archaeologists, and should be valued by all who are interested in knowing about the past.

### Collections

Northfield's prehistoric sites have been intensively collected over many generations. Even the native peoples picked up attractive objects fashioned by their ancestors, and moved them about the land. Their successors probably noted such things from the first turn of the furrow. By the end of the 19th century, collecting was a hobby with high visibility in the Connecticut Valley (Massachusetts Historical Commission 1984), but we know of collecting in Northfield only from the beginning of the present century. Large collections were amassed, and lost, over the years. Large collections still exist in private hands, most of them amassed by the current owner, and sites are now suffering destruction at the hands of enthusiasts willing to dig for their curiosities. The collectors were, for the most part, both cordial and informative to the University survey teams who interviewed them and examined their collections. Few of the collections, however, have even rudimentary written records to accompany them, and when memory fails, they will lose what information value remains.

There are collections in the possession of the Northfield Historic Society that carry some information about their sources. The adequacy of the information for interpretive purposes varies widely, even within collections, and is generally low. The collections in the Society's museum in 1976 were cataloged and interpreted by U Mass investigators, and those data were added to the Museum's holdings. The collections in the Dickinson Library, however, appear to be devoid of information except for the identities of some of the donors. It is not possible to tell which pieces were found in Northfield and which elsewhere, although some of the pieces clearly originated out of state, some from great distances away. Northfield's institutional collections could even now support some limited educational uses. They could be significantly enhanced if collections now in private hands could be acquired by gift or bequest, with identification information. Properly identified collections would be very useful for developing educational displays for Northfield residents, both children and adults.

We were unsuccessful in our efforts to locate reputed Northfield materials in depositories outside of town. While some may exist in Deerfield, where the information is not easily accessible, neither the Pratt Museum at Amherst nor the Springfield Science Museum appear to have significant materials from Northfield. Small collections, mainly of flakes and waste stone, from sites tested by the field school are on deposit at the Department of Anthropology at the University of Massachusetts in Amherst.



## Human Remains

As even a cursory reading of the relevant pages of Temple and Sheldon's History of Northfield reveals, remains of the original residents of the area are found from time to time--less so in the recent past than was the case earlier (Figure 1). It is likely that more of them will come to light in the future, as the graves were unmarked and rarely grouped into cemeteries. One such skeleton, found on the Great Meadows near Glen Street in 1923, was for years on display at the Dickinson Library. In 1979 it was moved on permanent loan to the Department of Anthropology at the University. At the time of receipt there, it was examined briefly for inventory. Incomplete as received, the skeleton was probably originally gathered without noticing the small and broken parts that are now missing, which include both hands and wrists, most toes, most ribs, all but one vertebra, and both knee caps. The remains are those of a young adult male, who had a healed fracture of the lower right arm. The cause of death was not apparent. The notes accompanying the bones indicate that the body had been flexed on the right side in the grave. The left femur, which would have been uppermost, shows weathering and other damage, indicating exposure for a time before discovery and removal.

The responsible study of human skeletal remains can reveal much about the conditions of life for the individual concerned (Ubelaker 1980). It is possible to learn about health status throughout life, the nature and extent of many kinds of diseases, diet, and population of origin. The Department of Anthropology at the University is embarking on a long-term study of human remains from southern New England, in expectation of learning about the populations involved. The Northfield skeleton is almost unique in being available for study and representing an interment north of Turner's Falls. Other remains may be found, especially as land disturbance intensifies on the Plains, where most of the graves seem to have been.

In 1983 the Massachusetts legislature mandated procedures for the reporting and handling of human remains found outside of bounded cemeteries. Should any such appear in Northfield, they should be left in place as far as possible, and immediate notification should be made to the Medical Examiner, who will notify the State Archaeologist if the remains appear to be 100 or more years old. Provision is made in the law for on-site examination, and for consultation with the Commission on Indian Affairs as appropriate. In no case are individuals entitled to retain or dispose of the bones without consultation.

## COMMITMENT TO PRESERVATION AND DEVELOPMENT

People are interested in archaeology. While a display of unlabeled "arrowheads" may evoke little interest, people subscribe to magazines, visit museums, volunteer for fieldwork, and use vacation time to visit restored archaeological sites of all ages. It should be obvious, therefore, that information about archaeological sites in their home areas,

when properly presented, will be of interest to nearly everyone. That kind of presentation is referred to here as "development" of archaeological resources, and it is made possible only when preceded and complemented by active preservation of those resources.

Because there are many uses for the land on which archaeological sites occur, and because there are many different constituencies with interest in the sites themselves, it is appropriate that government be concerned about landuse conflicts that involve archaeological sites, and about the wise use of the finite resource that they represent. The interests of all citizens, including property owners, are best served by enlightened awareness of such issues in municipal government and among the citizens.

Preservation and development are best achieved if everyone is involved--the public, special interest groups, municipal officeholders and agencies. All of these groups, which in Northfield especially overlap in personnel, need to become aware of the existence and value of archaeological resources of all kinds in their area. They need to become sensitive to the ways in which their activities may harm or protect those resources. They need to develop and institutionalize procedures for effective consultation within the community, and beyond, in the interests of wise resource use. Because the personnel of town boards and agencies change frequently, special problems arise with respect to continuity of policies and procedures. Each new incumbent must learn anew about such matters as policies regarding archaeological sites, which may be construed as peripheral to the responsibilities of the office. Cooperation and communication among and between offices can go far to overcome such problems.

Northfield's municipal government is comprised of a number of commissions, boards, and offices whose responsibilities include supervision of some landuse functions. These include the Board of Selectmen, the Planning Board, the Highway Department, the Historical Commission, the Conservation Commission, the Sewer Commission, the Board of Health and the Health Officer, the Cemetery Commissioners, the Zoning Board of Appeals, and officers such as the fence viewers, forest warden and so forth. All of these officers are involved in some way or another with landuse planning and management of property. In addition, the private Water District managers and the Historical Society have important roles to play. Awareness in each of these offices of the existence, value, and fragility of archaeological sites would be highly beneficial in terms of effective action for site protection and appropriate development.

A town-wide commitment to archaeological preservation does not in any sense imply that archaeological sites take precedence over all competing land uses. Rather, it implies a willingness to give appropriate attention to sites so that archaeological resources are not heedlessly destroyed. In most cases, landuse competition involving archaeological sites can be minimized or even eliminated by intelligent forethought and



planning. In irreconcilable situations, the archaeological site can be removed, with skill and care, and interpreted for the benefit of a wide public. Federal and state laws recognize that priorities so defined are in the public interest. Effective realization of the goals of historic preservation must involve planning and commitment at the town level; indeed, it is predicated upon it.

There are a number of agencies and institutions in any community that can be effective vehicles for a program of public education in archaeology and site preservation. Among these are schools, libraries, the Historical Society, special interest and service clubs, and knowledgeable individuals. Northfield is well situated to take advantage of expertise located at the nearby colleges and university, and at the Northfield-Mt. Hermon School. All these vehicles can contribute occasionally to creating an informed awareness of the value and fragility of archaeological sites, as well as building interest and enthusiasm for the study of the past.

#### MEANS FOR PRESERVATION

For communities desirous of preserving and developing their archaeological resources, many means are available. Local initiatives can be made in education, curation of collections, planning for compatible landuse policies, and zoning or the creation of special districts to preserve sites in place. At the county level there is help available for planning. At the state and federal levels there are laws that can help to protect sites from unmitigated destruction and may make funds available for the purpose, and programs that recognize the historical and environmental values of sites, and offer some limited protection.

#### Initiatives for Education

The variety of means and institutions available to any community can best be utilized if coordinated into well planned programs for education. A number of such programs can be readily developed by communities such as Northfield, using expert help available through cooperative arrangements with local or academic experts.

Especially suitable for schools are programs and projects built around the study of material objects used by people in their daily lives, in special tasks or jobs (cf. Cotter 1974). These studies can be planned to illustrate the processes of archaeological reasoning, which have been developed by archaeologists to help them make inferences about human behavior from the study of material objects made and used by people of any time or place. Archaeological reasoning of this sort has much in common with the best of detective fiction, and can lead to remarkably detailed insights into behavior both familiar and exotic. For higher grades, studies in human ecology are particularly suitable and informative, combining as they do methods and data from the natural and physical sciences and the humanities.

Programs in collection curation and collection enhancement are especially appropriate for special interest groups and historical commissions to undertake or sponsor. Such programs encourage and facilitate the compilation of catalogs and records documenting local collections of archaeological materials, in either public or private ownership. The collection of oral histories relating to archaeological sites of all ages, including even recently abandoned structures, areas, or practices, is a valuable activity, fascinating in itself and productive or significant historical lore. Collections can be used to create informative exhibits, planned for the special interests and needs of local audiences. Conservation programs for the long-term curation of collections will assure the town of access to their information in the future.

Programs for the assembling and study of archival materials can be undertaken by a wide range of groups and institutions--local history projects in the schools, committee projects for the historical society and commission, and tasks for special interest groups. The archaeology of the historic period can be identified and interpreted through archives, without damage to sites in the ground, even while such activity enhances the site's heritage values (Cotter 1974).

Education programs such as these should be undertaken only in conjunction with adequate procedures for site protection at the local level. Education programs will increase interest in the sites and, unless they instill the ethic of site protection and are accompanied by effective protection measures, they can lead to increased destruction of sites. It is crucial that site locations not be published until or unless they can be fully protected. Discretion in the dissemination of locational information cannot be overemphasized, for the protection of the sites and of the landowner's rights.

It is appropriate that the landowner's cooperation and interest in site protection be solicited from the beginning. Casual digging, or excavation by unqualified people, casual collecting of artifacts and the loss of information that usually results, are not in the landowner's best interest, since such activities depreciate the information content and heritage values of the sites, disturb and reshape the land surface, and raise liability issues. Destruction of sites by non-archaeological landuse practices is not always necessary; awareness of alternatives may be incentive enough to avoid damaging the historic resource.

An informed public, and its representatives in public offices, can be taught to recognize and evaluate threats to archaeological sites, whether these come from human activities or natural process of erosion. When threats are recognized early, it is usually possible to devise plans for mitigation of damage.

#### Planning for Compatible Landuse

Long-range planning is beneficial to everyone, not because we can predict or control our futures in detail, but because having a plan makes options clearer, and allows us to think creatively about alternatives. Northfield recognized that when it undertook the preparation of a Master



Plan, published in 1977. The planners noted the presence of archaeological sites in the town, and recommended that consultation procedures be developed to include consideration of known archaeological sites (Northfield Planning Board 1977: 113). The recommendations assumed the availability of a "sensitivity map" that would show site locations, as an aspect of this present report. In 1977 that seemed feasible; it is less so now, since it has become clear subsequently that archaeological sites are still being discovered in Northfield. A detailed map would have an undeserved look of authority about it, and would be likely to create complacency. Instead, this chapter and Table I offer information about those places in the town most likely and least likely to contain archaeological sites, so that appropriate vigilance can be exercised.

As this is written, all the sites known exist within intensively utilized land areas of the town, on the Plains and Meadows (essentially the first five landforms shown on Figure 2). The Master Plan's map 9-1 (Northfield Planning Board 1977: 108), reproduced here as Figure 3, shows that the Plains have development priority for residential use (Figure 3: numbers 1 and 2) and some agricultural use (Figure 3: number 3 in West Northfield). The Meadows are given priority for agricultural use (Figure 3: number 3).

Residential construction can destroy archaeological sites very effectively, but is also uniquely flexible because of the small amount of land actually needed for buildings exclusive of landscaping. Therefore, there is the possibility of planning for minimal impact on archaeological sites in the course of residential construction. Buildings may be sited a few crucial feet in one direction or another, landscaping can be adjusted to preserve historical values, or sites can be partially excavated with proper controls, to clear land for other uses. What is needed is advance notice to the landowner, and consultation and planning with an archaeologist. This, in the normal course of events, depends upon good will and cooperative spirit among all parties.

New construction planned for the Plains, or the dunefields on them, should be preceded by some investigation of the archaeological situation on the site, with consultations among the community agencies having responsibilities related to it. In Northfield, this would mean that the Health Officer, the Water District managers, and the Sewer Commission should be willing to ask about archaeological sensitivities, and should keep alert to the possibilities of site existence. The Historical Commission should be notified of any finds, and the Commission can then seek help from the State Archaeologist or archaeologists at the University. The greater the lead time for planning, the more likely something constructive and satisfactory to all parties could be accomplished.

As for the Meadows, farming is important there today, as it was in the prehistoric past. Repeated plowing of archaeological sites does not necessarily represent progressively greater destruction, since the greatest damage is done with the first tilling of the site (Talmage and Chesler 1977). However, if the plowed land is subject to erosion, so that mass is lost either through gullying or by sheet erosion, progressive damage does occur. Plowing progressively deeper, either because of

changes in technology or because of loss of surface sediments, will inflict progressively greater damage on sites, until little or nothing is left to inform an archaeologist. Topsoil stripping is, obviously, highly destructive. The use of meadows for wildlife sanctuaries is an ideal landuse for the preservation of archaeological sites, as is any non-intrusive recreational use. Farming practices which conserve the topsoil will also protect archaeological sites, as will steps taken to reduce riverbank erosion, once those are in place. The construction of erosion-control measures can be very destructive, and archaeological investigation prior to their implementation is highly recommended (Wilson and Belding 1979). Northeast Utilities, a major meadowlands owner, has shown increasing awareness of archaeological sites on their holdings and an interest in preserving them both from construction damage and looting.

The situation in the forested hills is more problematic. The survey teams encountered no prehistoric archaeological sites in the areas they tested east of Main Street. However, our analysis of prehistoric life-styles in the area led us to expect small, special-purpose sites to occur in the hills, where people would hunt and trap, and collect nuts, rocks, and firewood (Dincauze 1978b). Such sites are likely to be close to running water. The limited development envisioned for the hills in the Master Plan document could both reveal and destroy sites, since desirable homelots are expected to have qualities of levelness and good drainage that would have been attractive in the past as well. If watershed conservation zones are established in the hills, as recommended (Northfield Planning Board 1977), archaeological sites in such areas would be protected from all major threats except looting. A similar situation exists in the State Forst lands. The construction of reservoirs, however, would damage or destroy sites at or below pool level, and should be preceded by archaeological survey.

The Master Plan identified a number of town needs that must be met in the future. New road construction was anticipated, new cemetery land was needed, industrial zones were to be established, and new water and sewer lines installed. All of these undertakings could threaten archaeological sites. Many of the proposed road locations cross the plains in areas where sites are known and where others are likely to be found. Road construction usually must be preceded by archaeological surveys, as dictated by both federal and state law. Land appropriate for cemeteries today would have drainage and sediment characteristics attractive for human settlement in the past. The proposed industrial zones include one that is known to have archaeological sites on it (on Beers Plain) and another (at Northfield Farms) that is archaeologically unknown. The installation of major water mains and sewer lines can be expected to reveal archaeological sites, including those of early historic Northfield; since such undertakings are usually partially financed by the federal government, archaeological surveys in advance of construction are required by law. State permitting may also invoke archaeological protection procedures. Consideration of archaeological sensitivities in the planning stages of all these kinds of public works projects could save significant amounts of time and money.



Northfield has been more aware of its rich historic and prehistoric past than have many towns of comparable size. Planning for historic preservation is well advanced in the town, as its listings on the National Register of Historic Places attest. An effective Historical Commission, with cooperative ties to the county regional planning office, can avail itself of help and support as it works to preserve and protect both its historical structures and its archaeological sites.

### Zoning and Districting

Archaeological sites can be protected in the course of planning for other public amenities, such as open space, watersheds, recreational areas, scenic easements, and agriculture. Awareness of the existence and nature of archaeological sites can inform decisions about appropriate development in the town, and its restriction in selected areas. While Northfield residents have rejected the designation of Main Street as a local historic district, such designation would protect not only the built environment, but those traces of early Northfield that certainly remain underground in the area. As such traces are encountered, they should be recorded, and study made of them while they are still in the ground.

State law also provides for deed restrictions for the purposes of protecting environmental and historical amenities. Landowners concerned about long-term protection of such might consider giving limited restrictions to the town conservation or historical commissions, or to such other non-profit organizations as may be appropriate custodians.

### Cooperating with Federal and State Programs

Federal and state laws protecting historical and archaeological sites become relevant whenever public funds are expended, or certain public licenses or permits are granted, for activities that modify the land. State historical preservation laws apply to all land-modification activities on public lands, and reserve to the state the ownership of archaeological materials on such lands.

Since 1906, the federal government has had some laws and regulations to protect archaeological sites on federal lands. More recently, as awareness of the historical and heritage values of archaeological sites has grown, the legal protection has been expanded greatly at the federal level and has been extended by almost all the states. In Massachusetts, county and municipal government bodies are now involved directly in planning for the wise use and preservation of archaeological sites from the full range of the past 11,000 years.

This awareness has grown at the same time as the pace of destruction of archaeological sites has increased alarmingly. Congress has responded by enlarging the basis for legal site protection, by insisting on active stewardship by federal land-managing and permitting agencies, and by

creating special agencies that have responsibilities for designing preservation policies and monitoring their implementation. The State Historic Preservation Office administers both federal and state laws for preservation planning. In Massachusetts, the State Historical Commission fills this function. They are guardians of archaeological resources as well as the more publicized historic buildings and districts.

The key bodies of federal legislation as of 1984 are summarized briefly below, in order to indicate the scope of the site protection program. The laws are administered by a variety of federal agencies and their state-level counterparts, through procedures detailed in agency regulations and clarified by judicial decisions. Further information about the most relevant laws and regulations can be found in a document prepared and distributed by the Massachusetts Historical Commission, entitled Public Planning and Environmental Review. That document is periodically revised to keep in step with the changes in federal and state legislation and regulations. Texts of federal laws can be found in the United States Code and its several supplements; regulations are published for initial review and comment in the Federal Register and are ultimately codified in the Code of Federal Regulations. The staff of the Massachusetts Historical Commission is the best source of information about current laws and regulations. Anyone wishing to deal directly with the texts can find them in the Government Documents section of the University of Massachusetts library.

#### Federal Laws for Historic Preservation

The National Historic Preservation Act of 1966 (PL89-665, as amended, especially by PL96-515) established the National Register of Historic Places under the jurisdiction of the Secretary of the Interior, to record officially all districts, sites, buildings, structures, and objects significant in national, regional, state and local history, architecture, archaeology and culture. Funds are authorized to provide matching Grants-in-Aid for survey and planning for historic preservation, and for acquisition and development of sites and structures for preservation and appropriate use. (Acquisition and development money has not been appropriated since 1981.) The grants are administered through the office of the State Historic Preservation Officer (SHPO); they are available to public and private groups or persons which can qualify under the regulations. Local government agencies which meet high standards may be certified to receive some funds directly.

The act also established the Advisory Council for Historic Preservation, which reports to the President directly on matters under its charge, to oversee the preservation and management of National Register properties, or others eligible for such recognition, and to advise the President and Congress on matters relating to preservation policy and actions. Section 106 of the Act requires consultation with the Advisory Council by any federal agency whose activities (direct, licensed, or permitted) may have an impact on properties listed on or eligible for the National Register.



The National Register itself is administered within the Department of the Interior, National Park Service; nominations usually are processed through the state SHPO office (the Massachusetts Historical Commission).

Among the goals of the National Environmental Policy Act of 1969 (PL 91-190) is the preservation and enhancement of historical and cultural values in the environment. Section 102 requires consideration of such environmental values as part of any Environmental Impact Statement prepared by or for a federal agency. The administration of the provisions of this act is completely interwoven into federal and state laws and regulations.

The Archaeological and Historic Preservation Act of 1974 (PL 93-291) authorizes the expenditure of federal funds for the salvage of archaeological or historical data threatened with destruction by federally initiated, funded or licensed projects. The Secretary of the Interior has special responsibilities for facilitating the intent of the act. If the environmental and cultural review and compliance processes under the Historic Preservation Act and the National Environmental Policy Act have been properly carried out, there is rarely any need to invoke this legislation. It is, however, an important safeguard for the system of site protection.

Other laws, including those which define the federal administration of national forests and national parks, Indian lands, and surface coal mining, have provisions which protect archaeological resources. They are rarely relevant for activities in Massachusetts.

#### Massachusetts Legislation for Preservation of Archaeological Sites

State laws protecting archaeological resources fall under three separate jurisdictions: the Massachusetts Historical Commission (including the offices of the State Historic Preservation Officer and the State Archaeologist), the Executive Office of Environmental Affairs (EOEA), and the Department of Public Works.

The Massachusetts Historical Commission and the SHPO administer the federal program for historic preservation, including review and granting. At the state level, the Commission and the State Archaeologist have specific powers and responsibilities for the protection of archaeological sites on public lands, as specified in Chapter 9 of the General Laws. A state-wide inventory of historic properties, including archaeological sites, is one of the major responsibilities, and it is the basis on which policy is made for the preservation or other use of such properties (Massachusetts Historical Commission 1979). Section 27C of Chapter 9 requires that any archaeological survey or excavation conducted on public land within the state be done only under permit from the State Archaeologist. As public lands include those owned and administered by municipal and county governments, all public officials should be aware of this provision. All sites on public land, however discovered, are to be reported to the State Archaeologist, and any artifacts recovered on public lands are

declared to be state property. Section 27C provides fines and other punishments for the sale of state-owned antiquities or fraudulent artifacts.

The Massachusetts Historical Commission reviews historical properties (including archaeological sites) which may be eligible for the National or State Registers of Historic Places. Decisions about eligibility are made on the basis of criteria of significance explicated in the State Plan for historic preservation (Massachusetts Historical Commission 1979). Listing on the Registers confers a measure of protection against publicly-supervised activities that might threaten the properties, in that impacts must be reviewed and alternatives exhaustively considered before a registered historic property may be sacrificed to other landuse priorities.

The State Archaeologist has a further role in the protection of archaeological resources through participation in consultations about the disposition of all human remains found outside of marked cemeteries, if they appear to be 100 or more years old. Massachusetts native peoples, highly sensitized about the exhumation of their ancestors, now have a voice in deliberations about study and reburial of the remains. No skeletal remains unearthed casually or accidentally should be disposed of without notifying the Medical Examiner.

The Executive Office of Environmental Affairs includes archaeological sites among the environmental amenities subject to its protection, and requires consideration of impacts upon them in its review procedures under Section 62 of the Massachusetts Environmental Protection Act (Chapter 30, General Laws, Sections 61 and 62). The EOEA cooperates with the Massachusetts Historical Commission and the State Archaeologist in assessing the magnitude of impact and the significance of the resources involved.

The Department of Public Works has jurisdiction over the Board of Underwater Archaeology (Chapter 6 Sections 179-180). Special permits are required for the recovery of archaeological materials from water bodies under state control.

In addition to these administrative offices, there are laws relating to landuse, property restrictions, and open-space preservation which can be used to help protect archaeological sites. Chapter 9, Sections 27 (Historic Landmarks) and 26 (State Register of Historic Places) provides for the institution of special restrictions on privately-owned land, which may be invoked with the landowner's consent for the protection of natural, historical, scientific or cultural values on the land. The restriction provisions make it possible for agencies or corporate bodies other than the owner of the land to have a recognized interest in preserving some of its special values or amenities. Special protection available elsewhere in the law for wetlands, scenic rivers, and agricultural lands can also benefit archaeological sites, which are likely to occur in such places.



## Surveys

The preparation of archaeological assessments for Environmental Impact Statements, or for Advisory Council or Historical Commission review, is an exacting professional task. Such assessments may vary widely in respect to their scale and scope, depending on the size and type of project and impact anticipated. However, all must meet high standards for research design, background research, historical and environmental context evaluations, appropriate field methods, and clarity and completeness of description and interpretation of any archaeological sites or objects encountered.

Surveys to identify and evaluate archaeological resources may be required as part of the planning process for any project using federal funds, permits, or licenses. Authority to require such surveys derives from some or all of the laws and regulations discussed above. In cases where projects are developed cooperatively or jointly between municipalities and federal agencies, federal money may be available to help defray survey costs. This may or may not be the case where the agency's involvement is limited to licenses or permits.

For projects involving only state and/or municipal agencies, without federal involvement, the requirement for an archaeological survey will depend upon a number of relevant factors. Advice should always be sought from the Massachusetts Historical Commission staff and the State Archaeologist well in advance of project commencement. Failure to meet the review requirements may jeopardize project funding, clearance, or even continuance under some circumstances.

It is not possible to generalize about the scope or scale of archaeological surveys. There is no single standard, since each instance faces unique problems of topography, environment, culture history, and even methodology. Trained and qualified archaeologists must make the decisions about survey scope, type and scale. A clear discussion of these factors may be found in The Archaeological Survey: Methods and Uses (King 1978).

## CONCLUSION

The archaeological fieldwork accomplished in 1976 and 1977 failed to be supportive of local history and folklore current at the time. The site interpretations given in Temple and Sheldon's History (1875) and on the Massachusetts Tercentenary signs are incongruent with what we now know about the age and function of the sites involved. We found no evidence for the existence of a major Squakeag village within the present town limits, but in this case it is important to note that we spent very little time in the area favored by Temple and Sheldon. The several "granary" sites remain a puzzle, perhaps because of insufficient digging.

Instead, the archaeologists defined a broader and deeper past than Northfield was aware of. Occupation evidence going back at least 8000 years into the past has been demonstrated. There were important occupations of the area in the years between 5000 and 4000 years ago. These early occupations help us achieve new insights into the ages of major landforms in the town, indicating that the alluvial terrace series which dominates the river trench may have developed mainly in the last 8000 to 9000 years. We have recovered tangible remains of the second settlement in the ditch and bank features on King Philip's Hill, which are not Indian fort remains. Similar features on the east side of the river could be even earlier, relating to the first settlement. Occupation by the Squakeags, attested by historical evidence, probably took the form of scattered hamlets and cornfields along the river, rather than a settled village. If such existed, it was likely located on land now in Vernon, Vermont.

All of these new findings indicate that considerable research potential exists even today in Northfield. The continuing destruction of sites by inadvertance, neglect, and looting, is therefore of considerable concern. The chance to learn about the town's past is slipping away.

The field work was done, and this report submitted, in the hopes that the town will be able to take charge of its past as well as of its future.



## REFERENCES CITED

Arrow

- 1974 Official Arrow Street Map Atlas: Western Massachusetts. Arrow Publishing Co., Boston.

Ashley, Gail M.

- 1972 Rhythmic Sedimentation in Glacial Lake Hitchcock, Massachusetts-Connecticut. Contribution No. 10, Geology Department, University of Massachusetts, Amherst.

Bain, G.W., and H.A. Meyerhoff

- 1963 The Flow of Time in the Connecticut Valley. (2nd edition). Connecticut Valley Historical Museum, Springfield.

Balk, Robert

- 1956 Bedrock Geology of the Massachusetts Portion of Northfield Quadrangle. U.S. Geological Survey, Map GQ92. Washington, D.C.

Barber, Russel J.

- 1977 Disjunct Plant Distributions and Archaeological Interpretation. Man in the Northeast 13:103-107.

Campbell, Kerry Jacquith

- 1975 Surficial Geology of the Northfield Quadrangle, Massachusetts, New Hampshire, and Vermont. M.S. thesis, Department of Geology, University of Massachusetts, Amherst.

Campbell, Kerry J., and J.H. Hartshorn

- 1980 Surficial Geologic Map of the Northfield Quadrangle, Massachusetts, New Hampshire, and Vermont. U.S. Geological Survey, Map GQ1440, Washington, D.C.

Clark, Janet Innes, and Carl A. Carlozzi

- 1976 A Natural Resources Inventory Atlas for Franklin County. Cooperative Extension Service, University of Massachusetts, Publication 116. Amherst.

Cole, John R.

- 1982 Western Massachusetts "Monks Caves": 1979 University of Massachusetts Field Research. Man in the Northeast 24:37-69.

Cotter, John

- 1974 Above Ground Archaeology. American Revolution Bicentennial Commission, Washington, D.C.

Cronon, William

- 1983 Changes in the Land: Indians, Colonists, and the Ecology of New England. Hill and Wang, New York.

Curran, Mary Lou, and Dena F. Dincauze

- 1977 Paleo-Indians and Paleo-Lakes: New Data from the Connecticut Drainage. New York Academy of Sciences, Annals 288:333-348. New York.

Davis, Margaret B.

- 1969 Palynology and Environmental History During the Quaternary Period. American Scientist 57(3):317-332.

Day, Gordon M.

- 1953 The Indian as an Ecological Factor in the Northeastern Forest. Ecology 34:329-346.

- 1965 The Identity of the Sokokis. Ethnohistory 12:237-249.

- 1975 The Mots Loups of Father Mathevet. National Museums of Canada, Publications in Ethnology 8. Ottawa.

- 1978 Western Abenaki. In Handbook of North American Indians, Vol. 15, Northeast, edited by B.G. Trigger, pp. 148-159. Smithsonian Institution, Washington, D.C.

- 1981 The Identity of the Saint Francis Indians. Canadian Ethnology Service Paper No. 71. National Museums of Canada, Ottawa.

Derry, A., H.W. Jandl, C.D. Shull, and J. Thorman

- 1977 Guidelines for Local Surveys: A Basis for Preservation Planning. National Park Service Publication 189, Washington, D.C.

Dincauze, Dena F.

- 1975 A Brief History of Archaeology in the Pioneer Valley: Antiquarianism and Scientific Inquiry. Manuscript in possession of the author.

- 1977 Report to the Northfield Historical Commission on the 1976 Archaeological Field School Program of the Department of Anthropology, University of Massachusetts, Amherst. Manuscript.

- 1978a Predicting Site Encounter: Two Techniques for Landscape Analysis. ASCA Newsletter 5(3):2-11. American Society for Conservation Archaeology.

- 1978b Archaeological Survey in Northfield State Forest, 1977. Report submitted to the Department of Environmental Management, Division of Forests and Parks. Commonwealth of Massachusetts.

- 1979a Teaching Prehistoric Archaeological Survey in the Northeast. In Essays in Northeastern Anthropology in Memory of Marian E. White, edited by William Englebrecht and Donald Grayson, pp. 22-40. Occasional Publications in Northeastern Anthropology 5.



- 1979b Prehistoric Archaeological Resources in Hadley, Massachusetts:  
A 1978 Assessment with Recommendations for Protection. Massachusetts  
Historical Commission, Boston.
- 1980 Research Priorities in Northeastern Prehistory. In Proceedings of  
the Conference on Northeastern Archaeology, edited by James A. Moore,  
pp. 29-48. Research Reports 19, Department of Anthropology, Univer-  
sity of Massachusetts, Amherst.
- 1982 Monks' Caves and Short Memories. Quarterly Review of Archaeology  
3(4):1,10,11.
- in prep. Report of Investigations at King Philip's Hill, Northfield,  
Massachusetts. Manuscript in preparation.
- Dincauze, D.F., and J.W. Meyer  
1977 Prehistoric Resources of East-Central New England: A Preliminary  
Predictive Study. National Park Service, Cultural Resource  
Management Studies. Washington, D.C.
- Dincauze, D.F., J.A. Moore, and D. Root  
1977 Report of Work to Date (6/15/77). Research report on Survey and  
Planning grant, Massachusetts Historical Commission, Boston.
- Dincauze, D.F., J.A. Moore, D. Root, M. Roberts, and L. Casjens  
1977 An Archaeological Properties Survey of the Pauchaug Meadow Boat  
Landing, Northfield, Massachusetts. Prepared for Northfield  
Historical Commission by the Institute for Conservation Archaeology,  
Harvard University. (ICA #6).
- Dincauze, D.F., and M.T. Mulholland  
1977 Early and Middle Archaic Site Distributions and Habitats in  
Southern New England. New York Academy of Sciences, Annals 288:  
439-456.
- Dincauze, D.F., H.M. Wobst, R.J. Hasenstab, and D. Lacy  
1981 RAASC: Retrospective Analysis of Archaeological Survey Contracts  
in Massachusetts, 1970-1979. Report prepared for the Massachusetts  
Historical Commission, Boston, Mass.
- Funk, Robert E.  
1978 Post-Pleistocene Adaptations. In Handbook of North American  
Indians, Vol. 15, Northeast, edited by Bruce G. Trigger, pp. 16-27.  
Smithsonian Institution, Washington, D.C.
- Goddard, Ives  
1978 Eastern Algonquian Languages. In Handbook of North American  
Indians, Vol. 15, Northeast, edited by Bruce G. Trigger, pp. 70-77.  
Smithsonian Institution, Washington, D.C.

- Griffin, James B.  
1967 Eastern North American Archaeology: A Summary. Science 156:175-191.
- Gyrisco, Geoffrey M.  
1980 Legal Tools to Preserve Archeological Sites. 11593, Special Issue, pp. 1-11. Heritage Conservation and Recreation Service (NPS) Washington, D.C.
- Hartshorn, Joseph H.  
1969 Geograph and Geology of Glacial Lake Hitchcock. In An Introduction to the Archaeology and History of the Connecticut Valley Indian, edited by W.R. Young, pp. 19-27. Springfield Museum of Science, Springfield, Massachusetts.
- Hole, F., and R.F. Heizer  
1977 Prehistoric Archaeology: A Brief Introduction. Holt, Rinehart and Winston, New York.
- Jahns, R.H., and M.E. Willard  
1942 Late Pleistocene and Recent Deposits in the Connecticut Valley, Massachusetts. American Journal of Science 240:161-191, 265-287.
- Joukowsky, Martha  
1980 A Complete Manual of Field Archaeology. Prentice-Hall, Englewood Cliffs, New Jersey.
- King, Thomas F.  
1978 The Archaeological Survey: Methods and Uses. Cultural Resource Management Studies. Heritage Conservation and Recreation Service, Washington, D.C.
- MacConnell, William P.  
n.d. Massachusetts Map Down: 1971 Land Use and Vegetative Cover Mapping. Northfield Quadrangle. Department of Forestry and Wildlife Management, University of Massachusetts, Amherst.  
  
1975 Remote Sensing 20 Years Change in Massachusetts, 1952-1972. Classification Manual for Use with Massachusetts Map Down Maps. Massachusetts Agricultural Experiment Station, University of Massachusetts, Amherst.
- Massachusetts Historical Commission  
1978 Public Planning and Environmental Review: Archeology and Historic Preservation. Secretary of State, Commonwealth of Massachusetts, Boston.  
  
1979 Cultural Resources in Massachusetts: A Model for Management. Secretary of State, Commonwealth of Massachusetts, Boston.  
  
1984 Historic and Archaeological Resources of the Connecticut Valley. Secretary of State, Commonwealth of Massachusetts, Boston.



- McGimsey, Charles R.  
1972 Public Archeology. Seminar Press, New York.
- McHargue, G., and M. Roberts  
1977 A Field Guide to Conservation Archaeology in North America.  
Lippincott, New York.
- Miller, N.G., and G.G. Thompson  
1979 Boreal and Western North American Plants in the Late Pleistocene of  
Vermont. Journal of the Arnold Arboretum, 60(2):167-218.
- Moore, James A., and Dolores Root  
1979 Anadromous Fish, Stream Ranking and Settlement. In Ecological  
Anthropology of the Middle Connecticut River Valley, edited by  
R. Paynter, pp. 27-44. Research Reports 18, Department of An-  
thropology, University of Massachusetts, Amherst.
- Mott, J.R., and D.C. Fuller  
1967 Soil Survey of Franklin County, Massachusetts. U.S. Department of  
Agriculture, Soils Conservation Service, Washington, D.C.
- Northfield Planning Board  
1977 Pathway to Tomorrow: A Master Plan for Northfield. Northfield,  
Massachusetts.
- Rowlandson, Mary  
1913 A Narrative of the Captivity and Restauration of Mrs. Mary Rowlandson.  
In Narratives of the Indian Wars (1675-1699), edited by Charles H.  
Lincoln, pp. 118-136. Charles Scribner's Sons, New York.
- Salwen, Bert  
1969 The Archeological Resources of the Connecticut River Basin: Pre-  
liminary Survey. Report prepared for the National Park Service,  
Washington, D.C.
- 1978 Indians of Southern New England and Long Island: Early Period.  
In Handbook of North American Indians, Vol. 15, Northeast, edited  
by B.G. Trigger, pp. 160-176. Smithsonian Institution, Washington,  
D.C.
- Sammartino, Claudia F.  
1981 The Northfield Mountain Interpreter. Northeast Utilities, Berlin,  
Connecticut.
- Schafer, J.P., and J.H. Hartshorn  
1965 The Quaternary of New England. In The Quaternary of the United  
States, edited by H.E. Wright, Jr., and D.G. Frey, pp. 113-128.  
Princeton University Press, Princeton, New Jersey.

Snow, Dean R.

1978 Late Prehistory of the East Coast. In Handbook of North American Indians, Vol. 15, Northeast, edited by B.G. Trigger, pp. 58-69. Smithsonian Institution, Washington, D.C.

1980 The Archaeology of New England. Academic Press, New York.

Struever, Stuart, and Felicia A. Holton

1979 Koster: Americans in Search of their Prehistoric Past. Anchor Press/Doubleday, Garden City, New York.

Talmage, V., and O. Chesler

1977 The Importance of Small, Surface, and Disturbed Sites as Sources of Significant Archeological Data. Cultural Resource Management Studies, National Park Service, Washington, D.C.

Temple, J.H., and G. Sheldon

1875 History of Northfield, Massachusetts, with Genealogies. Joel Munsell, Albany, New York.

Thomas, Peter A.

1971 Middle Connecticut Valley Indian House Types: A Cautionary Note. Man in the Northeast 1:48-50.

1973 Squakheag Ethnohistory: A Preliminary Study of Culture Conflict on the Seventeenth-Century Frontier. Man in the Northeast 5:27-36.

1976 Contrastive Subsistence Strategies and Land Use as Factors for Understanding Indian-White Relations in New England. Ethnohistory 23:1-18.

1979a The Wills Hill Site: A Middle Woodland Hunting-Gathering Camp. Bulletin of the Massachusetts Archaeological Society 40(2):39-54.

1979b In the Maelstrom of Change: The Indian Trade and Cultural Process in the Middle Connecticut River Valley: 1635-1665. Ph.D. dissertation, Department of Anthropology, University of Massachusetts, Amherst.

1980 The Riverside District, the WMECO Site, and Suggestions for Archaeological Modeling. In Early and Middle Archaic Cultures in the Northeast, edited by D. Starbuck and C. Bolian, pp. 73-95. Occasional Publications in Northeast Anthropology 7.

Trigger, Bruce G.

1978 Introduction. In Handbook of North American Indians, Vol. 15, Northeast, edited by B.G. Trigger, pp. 1-3. Smithsonian Institution, Washington, D.C.

Tuck, James A.

1978 Regional Cultural Development, 3000 to 300 B.C. In Handbook of North American Indians, Vol. 15, Northeast, edited by B.G. Trigger, pp. 28-43. Smithsonian Institution, Washington, D.C.



- Ubelaker, Douglas H.  
1980 Human Bones and Archaeology. Cultural Resource Management Studies,  
National Park Service, Washington, D.C.
- Williams, S., L. Casjens, S. Ross, and J. Zorzin  
1977 A Sensitivity Model for Cultural Resources in the Corridor for a  
Natural Gas Pipeline to be Constructed Through a Portion of Massa-  
chusetts. Report prepared for TENNECO, Institute for Conservation  
Archaeology, Harvard University, Cambridge, Massachusetts.
- Willoughby, C.C.  
1935 Antiquities of the New England Indians. Peabody Museum, Harvard  
University, Cambridge, Massachusetts.
- Wilson, J., and M.W. Belding  
1979 Cultural Resource Reconnaissance for a Streambank Erosion Control  
Evaluation and Demonstration Project, Northfield, Massachusetts.  
Prepared for U.S. Army Corps of Engineers, New England Division,  
Waltham, Massachusetts.

APPENDIX A

ADDRESSES FOR INFORMATION ABOUT HISTORIC PRESERVATION,  
POLICIES, AND REGULATIONS

Advisory Council for Historic Preservation  
1100 Pennsylvania Avenue, N.W. #809  
Washington, D.C. 20004

Department of Anthropology  
Machmer Hall  
University of Massachusetts  
Amherst, MA 01003  
(413) 545-2221

Executive Office of Environmental Affairs  
100 Cambridge Street  
Boston, MA 02202  
(617) 727-5830

Massachusetts Historical Commission (and State Archaeologist)  
80 Boylston Street  
Boston, MA 02116



## APPENDIX B

### ACKNOWLEDGEMENTS

The following Northfield landowners graciously offered access to their lands for the survey crews. In most cases, they also provided invaluable information about their land and the town. All received a report on the investigations undertaken on their property, and the results. Whether sites were present or not, the data gathered were crucial to our research.

Richard Bassett, Gill Road  
Mr. and Mrs. Frank Bordner, Ashuelot Road  
Homer Browning, Jr., Route 63  
Commonwealth of Massachusetts, Department of Environmental  
Management, Division of Forests and Parks  
David Dillman, Tucson, Arizona  
Mr. and Mrs. James Dresser, South Mountain Road  
Norman Fowler, Route 63  
Martin G. Fritz, Beers Plain Road  
Richard A. and William R. Giles, Millers Falls Road  
Paul T. and Stephen Gorzocoski, East Street  
Mrs. Caroline Hall, Gulf Road  
Taylor and Clair Hanavan, South Mountain Road  
Mrs. Helen Llewelyn, Northfield Farms  
Edward H. Lord, Northfield Farms  
Northfield Conservation Commission  
Frank Podlenski, Meadow Street  
Helen Podlenski, Main Street  
Mr. and Mrs. William Roberts, Mount Hermon Station Road  
Robert and Margaret Shearer, Pine Meadow  
Mrs. Alice Starkey, Gulf Road  
Mr. and Mrs. Stanley Wickey, Mount Hermon Station Road

The following individuals contributed to our survey with information, access to collections, personal time and effort in our behalf and, in some cases, with access permission we were unable to use.

George Brodsky, Northeast Utilities  
Mrs. Priscilla Carroll, Main Street  
Mrs. Lawrence Hammond, Millers Falls Road  
Mrs. Alice Kiablick, Millers Falls Road  
Beverly Leyden, Northfield-Mount Hermon School  
Mr. and Mrs. George Nelson, Glen Road  
Northfield Historical Society  
Willis and Evelyn Parker, Beers Plain Road  
Richard Parsons, Mount Hermon Station Road  
Robert Remillard, Old Winchester Road

Mrs. Phyllis Shearer, Northfield Farms  
Anthony Spinelli, Northeast Utilities  
Owen Stacey, Mount Hermon Station Road  
Peter A. Thomas, Bernardston  
Trustees of the Dickinson Memorial Library

We must single out for special mention and thanks Rosa Johnston of the Northfield Historical Commission, whose remarkable vision, energy, and persistence made it all possible. All the field school personnel are indebted to her for help and encouragement.

Two exhausting, exciting years of Field School were made possible because of the dedication and good spirits of the teaching assistants: Joan Gero, James A. Moore, Mitchell T. Mulholland, and Dolores Root. The twenty-four students, of course, made it all worthwhile, and we thank them while not naming them here. Dena F. Dincauze directed both schools.

The printing of this report was funded by the Massachusetts Historical Commission.



# GREENFIELD



# RECORDER

Second Section

Thursday, March 24, 1977 — 15

## Northfield landmarks disputed

By ANDI GATES  
Recorder Staff

**NORTHFIELD** — A treasure chest of Indian folklore, long a source of pride and imagination for generations of Northfield residents, appears headed for hard times.

A study of Indian sites made public this week by the University of Massachusetts reveals that two of the town's most famous features, King Philip's Hill and the Indian granaries, have absolutely no archeological evidence to link them with native American culture.

But before town history buffs turn in their traditions, research indicates a fact which local officials find far more startling and exciting. There is evidence that Northfield was actively occupied at a much earlier period than when the Squahheags of the 17th century wandered in.

The report reveals that field investigations at — ironically — King Philip's Hill and several other undisclosed sites have produced evidence of a prehistoric use of the area 6,000 to 8,000 years ago.

"The legends have been around a long time and have been believed by many people," Historical Commission Ch. Rosa Johnston said. "But this is what education and social history is all about. It's this very early history we had not recognized that is the most exciting," she added.

The 20-page expurgated report of the Archeological Field School Program of the Department of Anthropology is now

available to the public at the town hall.

But in order to protect the privacy of landowners and preserve intact the archeological materials and potential finds, the location and identification of specific sites have been deleted, Johnston noted.

**THE HISTORICAL COMMISSION** served as liaison between the university and private landowners and additionally contributed some financial support to the project.

Working under the direction of Dr. Dena Dincauze last summer, teams of student archeologists spent six weeks identifying and evaluating about 19 Indian sites.

The study, which combined interviews, examination of local artifacts, intensive field work and lab analysis, is significant in that it marks the first scientific inquiry into the tradition that describes native American culture in Northfield.

While the results are still preliminary, according to Dincauze's report, crews using specialized techniques and soil studies, observed prehistoric cultural remains on at least nine sites including land owned by the town.

Historical period archeological remains were encountered on land belonging to two private owners and the town of Northfield. These included mill sites and associated structures, a dump and the remains of a burned building and scattered debris of the late 18th and 20th centuries.

**UNINTERPRETED PHENOMENA** include the so-called Indian granaries. While the results of field investigations on these features are inconclusive, the report notes, they are "fascinating and support a recommendation for further work."

Confirmed prehistoric sites, the study says, will be reported to the Massachusetts Historical Commission and the state archeologist for inclusion in the statewide prehistoric sites inventory. This will help protect the sites from destruction which involve public funds or licensing.

Significantly the so-called defense trenches on King Philip's Hill long touted to be the remains of Massachusetts' son's occupation during the winter of 1675-76 are now believed to be the remains of old land divisions from the second Northfield settlement.

"Our research disclosed no evidence whatsoever to link the features with native American activities of any period," the report states.

But the teams did turn up some limited evidence for prehistoric use of the site. While the University of Massachusetts is yet unable to date the materials with confidence, the reports states, "there is a good possibility for an antiquity of 6,000 to 8,000 years..."

**WHILE THE NEW INFORMATION** about King Philip's Hill is bound to be disturbing to a good many people, disconcerting to school children and possibly embarrassing to the state which erected a large metal marker near the hill in 1930 commemorating the Commonwealth's tercentenary, there are some people who have always known better.

Annals of the Pioneer Valley Memorial Assn. record George Sheldon's 1897 address in which he refutes the story of King Philip's occupation, a tale he wrote 25 years before in Temple and Sheldon's History of Northfield.

Despite the fact there is no evidence to link the ditches to warrior tribes, the site,

purchased several years ago by the town for conservation purposes, is still considered important.

There is very little known about the second Northfield settlement, Johnston said. If this interpretation is confirmed, the report indicates the features and their extensions both north and south from the conservation area "are precious historical evidence entirely worthy of continued preservation and study."

**ADDITIONAL SITES**, notably at Four Mile Brook show evidence of occupation 5,000 to 3,000 years ago. At least two other unidentified sites should be protected from extensive earth moving until definitive studies are possible, the report recommends.

These show evidence of occupations during the Woodland period which began 3,000 years ago and lasted until native people left the area and during the Archaic period about 4,000 years ago. Both sites are believed to be potentially of great importance.

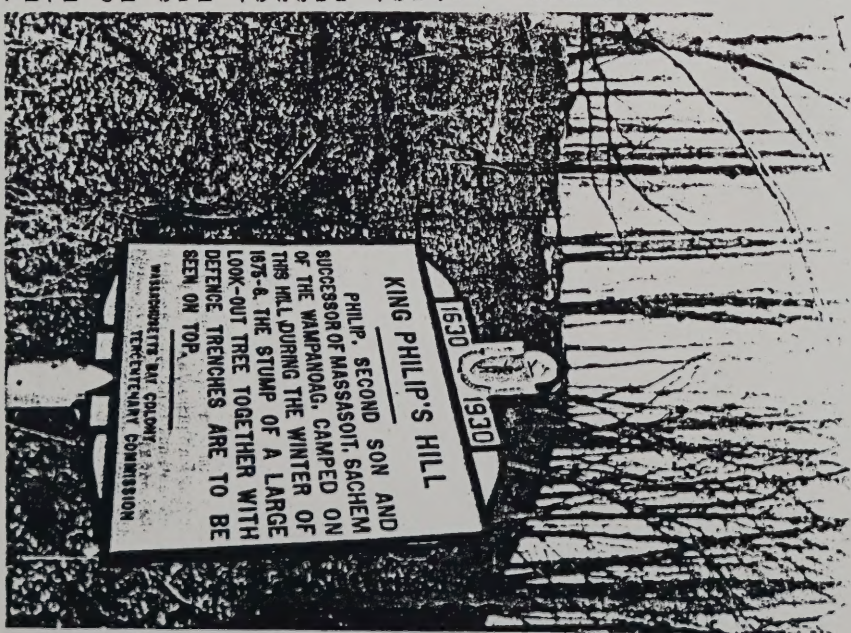
Additional properties on the Second Moose Plain were also confirmed as a prehistoric site and considered to be "outstanding for research potential."

Johnston said the UMSS teams will return to Northfield again this summer to continue their investigations.

Despite long-standing Northfield traditions and the archeologists' enthusiasm, the report says, the so-called Indian granaries remain uninterpreted. The impression, Dincauze said, is that "this class of phenomena is internally diverse; the features at each site were quite different from the others."

"None of our expectations were confirmed by the excavation. Therefore the features either are not granaries or are granaries of a kind not previously reported in the literature on northeastern United States archeology."

JOHNSTON SAID she would like to see



additional research on the second settlement and on the historic features such as the ruins, mills, cellar holes and old roads.

The Historical Commission has been additionally advised by Dincauze to investigate any proposed soil-moving activities within town, actively encourage collectors to catalog their materials and eventually donate them to appropriate repositories.

Local officials have also been encouraged to support private landowners in protecting sites from "unsuitable exploitation." Additionally recommended is the establishment of an oral history archives and more sensitive care for human skeletal remains now on display by several groups.

Johnston said this latter concern had already been favorably received by the groups.









NORTHFIELD PUBLIC LIBRARY



3 7351 00024 438 8